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ABSTRACT

This volume, a report of a National Institute of Mental Health Conference, presents a synopsis of the informal presentations and discussions along with a summary narrative and quotations from each of the three sessions. The first section of the book deals with adolescent personality, socioemotional, biological, and cognitive development. The second section focuses on the relationship of the adolescent with his/her family, peers, and school. The third section provides a roundtable discussion devoted to current research and conceptualization on stress responsivity. The report closes with a review of two longitudinal research programs dealing with ego resilience in children and adolescents. A references section and list of conference participants are appended. (JAC)

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Adolescence and Stress

Report of an NIMH Conference

on Research Directions for Understanding Stress Reactions in Adolescence (Rockville, MD, September 15-17, 1980)

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Charlotte Dickinson Moore
Editor, NIMH

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Foreword

Coming of age in America is inescapably stressful. For even the sturdiest of adolescents and their parents, the passage from childhood to adulthood is rarely smooth; for those already on unsteady ground, the transition can become turbulent and painful.

The Conference presented in this volume brought together a leading group of researchers on adolescence—both basic scientists and clinicians—to consider the nature of that passage and its meaning for healthy emotional growth and development. What emerges from these deliberations is a renewed respect for the resilience of youth in the face of multiple challenges to psychological integrity, and a new appreciation of stress as a natural component of healthy maturation. The Conference helped to pinpoint factors within and around the adolescent that foster "hardy" development—the capacity to handle well the many biological, psychological, and social pressures inherent in growing up.

This Conference revealed a wealth of new empirical information about the long-term changes that mark the adolescent years. It also revealed, however, the many gaps in our knowledge and conceptualizations about this critical period of development. Both its normal and aberrant course require far more study.

In view of these needs, the National Institute of Mental Health has recently established a Center for Studies on Child and Adolescent Mental Health Disorders within the Division of Extramural Research Programs (DERP). The Center, with its focus on clinical psychopathology, coupled with more basic research activities within the Behavioral Sciences Research Branch of DERP as well as the developmental research activities of the NIMH Intramural Research Program, promises to stimulate a broader and deeper understanding of the adolescent years. Out of these programs should come enhanced knowledge of ways to encourage a wholesome transition to adulthood, both for those adolescents who are biologically and environmentally fortunate, and for those who must struggle against less favorable odds.

As this volume repeatedly illustrates, most adolescents—even those with severe biological and social problems—have the flexibility and resilience to adapt to the challenges of their age and culture. For those of us committed to the well-being of children and youth, the task is to prepare them well, and to provide special support and guidance for those who are temporarily undone in their quest for maturity.

Herbert Pardes, M.D.
Director
National Institute of Mental Health

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Overview

Norman Garmezy, Ph.D.

This volume is a report of the Conference on Research Directions for Understanding Stress Reactions in Adolescence, sponsored by the National Institute of Mental Health (NIMH) and held on the National Institutes of Health campus on September 15-17, 1980. I had the good fortune to be invited to serve as cochairman of the sessions with Dr. Sigmund Dragastin, Chief, Personality and Emotional Processes and Problems Section of the Behavioral Sciences Research Branch of the NIMH.

The participants were not asked to prepare formal manuscripts but rather to present a short report of their work and to focus on its implications for the Conference theme. The volume presents a carefully detailed sequential synopsis of the informal presentations and discussions that marked the Conference. To provide the reader with the contents of each speaker's presentation, the editor decided to use a summary narrative report accompanied by liberal use of direct quotations derived from a taped recording.

This editorial decision may provide several advantages to the reader:

1. It offers a more direct sense of the nature of the participation and the exchange that took place at the meeting.
2. It provides in considerable detail the theoretical positions, the individual formulations, and the future research projections advanced by the various Conference participants.
3. It is an unvarnished account, with an absolute minimum of editorial interpretation, of what transpired (albeit in abbreviated form) during the exchanges among the participants and staff.

For the 19 participants at the Conference as well as the staff observers, these discussions evoked a sense of challenge. The number of presentations was deliberately kept few in number. The first session, on *Individual Development: Its Significance for Stress Responsivity and Stress Adaptation*, focused on adolescent personality development (Salvatore Maddi), socioemotional development (Richard Lerner), biological development (Anne Petersen), and cognitive development (Daniel Keating). Howard Moss served as the discussant.

The second session dealt with *Major Factors Acting on the Early Adolescent*, which included the family (Michael Goldstein); social relations including peers and families (John Hill); the schools (James Kelly); and environmental stress (Thomas Langner). The discussant for this session was Morris Rosenberg.

The third session, a roundtable discussion devoted to *Current Research and Conceptualization on Stress Responsivity*, included Beatrix Hamburg, Albert Bandura, Salvatore Maddi, John Ogbu, and Elizabeth Susman.

The final session saw a detailed presentation of two highly relevant longitudinal research programs: Jeanne and Jack Block's Berkeley study of ego resilience and ego control from the preschool years to preadolescence, which focuses on the personality attributes of the cohort of children and the family stresses to which they had been exposed during the investigation's 12-year span; and Emmy Werner's summary of the 20-year study of the children of the island of Kauai, from its initial evaluation of the participating mothers during their pregnancies, through the childhood and adolescence of their children, concluding with the findings related to their adaptation in early adulthood.

This Conference linking research on both adolescence and stress is part of a continuing concern of the Behavioral Sciences Research Branch of NIMH with problems of prevention and intervention in mental disorder. But prevention efforts are dependent upon basic research in both the biological and behavioral sciences. This then became the primary aim of the Conference: to bring together a diverse set of interdisciplinary investigators (a number of whom were not involved in stress research) who were willing to extend their thinking (and their data) into divergent channels that would serve to link stress factors and coping abilities evident during the important period of adolescence. One would have had good reason to view such a

Conference as premature. The systematic study of stress and coping in children is in its infancy when compared, for example, with the huge annual output of articles on the physiology of stress conducted with infrahuman and adult human subjects. As for adolescence, no less an expert than Joseph Adelson (1980) in his Preface to the recently published *Handbook of Adolescent Psychology* has fixed on this sentence to open his edited volume: "After a long, long period of intellectual sleepiness, the study of adolescence has begun to stir itself awake."

And yet, there is a natural affinity between the study of stress and the study of adolescence which does not arise out of their common state of partially arrested development. Adolescence has long been recognized as a period in development fraught with its stressful aspects. These stressors take three forms for the adolescent: It is a period of extraordinary change, multiple conflicts, and marked societal demands upon the individual for the successful completion of significant developmental tasks.

On the side of change, there are the hormonal, physiological, and somatic changes that are reflected in pubertal development. Over an average span of 4 brief years, the child is transformed, at least in terms of physical characteristics, into an adult (Petersen and Taylor 1980). But equally important psychological changes are spurred on by this rapid physical development. Among the psychosocial demands induced by puberty are: a heightened sexuality, the growth of peer attachments, a striving to achieve autonomy from and to reduce dependency upon parents, the assumption of specific gender roles, and a heightened search for personal identity.

The search for identity is facilitated in adolescence by the cognitive changes that occur during this period. The acquisition of formal logic accounts for some but not all of the shifts that take place. Identity is an abstraction, as are concepts such as justice, friendship, loyalty, morality; to comprehend these abstract concepts, a child can no longer be bound by concrete thinking. In addition, planfulness in problemsolving and the ability to inhibit impulses and to delay gratification are further accompaniments of cognitive growth and maturation (Keating 1980).

As for conflict, this tends to be focused on parents as the most significant adults in the life of the adolescent. The roots of such stressful experiences are often to be found in the disparity between the values of the adolescent peer culture and familial values. Although such parent-adolescent disagreements are commonplace, their frequency does not necessarily moderate their intensity.

As for societal demands, one need only consider the many developmental tasks adolescents must successfully complete in their transition to adulthood: 1) to achieve the gender-appropriate social role; 2) to accept one's body image; 3) to achieve independence from parents; 4) to find a responsible sexuality; 5) to complete requisite academic goals; 6) to prepare for an occupation; 7) to develop a set of values necessary for filling later roles as spouse and parent; 8) to evolve a set of values and a philosophy of life that will be compatible with successful evolution into adulthood.

These multitudinous changes can be viewed as stressors in the sense that they entail significant adaptation needed to restore a sense of inner harmony and homeostasis to the individual. The assumptions of roles related to sexuality and academic, occupational, interpersonal, and social responsibility are major transitions that can bring discomfort and emotional distress in their wake.

The history of scientific concerns about adolescence also bears the imprimatur of stress. The appearance of G. Stanley Hall's epochal two-volume work on adolescence at the turn of the century proclaimed a developmental view of the period as one of storm and stress. Indeed, Hall's portrayal of the stage of adolescence carried such a heavy flavor of turmoil and maladaptation that it required decades before adolescence could be placed in a more responsible, normative context. Gold and Petronio (1980) ascribe Hall's overelaboration of the statistics of crime among adolescents to "the intensification of criminogenic instincts in an organism that has not yet mastered itself" (p. 499). "Adolescence," proclaimed Hall, "is the best key to the nature of crime. It is essentially antisocial, selfishness, refusing to submit to the laws of altruism."

The impact of Hall's position is described by Kett (1977) in his *Rites of Passage* in this manner. Characterizing the work as "the flawed achievement of eccentric genius," Kett notes:

> Yet in its day it had an undeniable impact on educators and social workers, men and women who respond-

> ed enthusiastically to Hall's conception of adolescence as a stage of life distinctive for aesthetic sensibility and inner turmoil, and who used Hall's viewpoint to justify the establishment of adult-sponsored institutions which segregated young people from casual contacts with adults. If Hall enunciated adolescence, they constructed it.

We are not yet entirely free of this "Sturm und Drang" view of adolescent life. Change has come slowly from the earlier fearsome views of turbulence to the more benign view of "normative crisis" that the period brings to the lives of young people. Today we regard Hall's views as exaggerated and have proof in the findings of various research programs (Conger 1977). Offer (1969, 1975) has looked longitudinally at a group of middle-class Midwestern children and finds little justification for perceiving them to be in a state of "turmoil." Anxiety and distress, asserts Offer, may be present as in rebelliousness, but these are not intense, chaotic, maladaptive patterns, but more typically are of a milder variety, tending to be transient and attenuated.

> There is a quantitative difference between the level of turmoil exhibited in the observed behavior of our adolescent subjects and in the normal adolescent process as conceived in much of the literature . . . On a continuum from normal to psychotic, our data suggest that for our population, the normal adolescent process is closer to the normal end of the continuum than is often conceptualized (Offer 1969, pp. 190-191).

An extensive study of 3,000 adolescents (Douvan and Adelson 1966) generated similar conclusions, a viewpoint with which Conger (1977) in his volume, *Adolescence and Youth*, basically agrees. They observe that while some adolescents may show violent affects, emotional turmoil, and a threatened loss of control, this is not a typical state and reflects the perceived salience of biased subsamples of boys who are often being seen by clinicians for the amelioration of their manifest disturbances. Happily, the model is not the mode.

It is appropriate, then, that this Conference did not focus on the maladaptive but rather heard the views of psychologists of varying biological, developmental, and clinical persuasions, joined with sociologists, a child psychiatrist (concerned with the adaptational problems of insulin-dependent diabetics), and an anthropologist who looks cross-culturally at the stress experiences of several different minority groups.

The research reported in the pages that follow is essentially normative. For example, Maddi seeks to extrapolate to the world of adolescence findings from the research he and his collaborator, Kobasa, have conducted with adult executives high and low in stress resistance (Kobasa 1979; Kobasa, Hilker, and Maddi 1979; Maddi 1980). He sees "hardiness," exemplified by *commitment*, *control*, and *challenge*, as a trait attribute that provides a recurrent life-span theme for the individual. He speculates about the role of early rearing experience and about the growth potential inherent during the period of adolescence that allows for possible reconstitution of personality patterns through a "trial by fire." His views of transformation versus avoidance coping parallel those of distinctions that have been made by others of coping versus defending. Rooted in psychodynamic theory, the latter distinction poses a debatable differentiation, but one that has great staying power in contemporary literature.

Lerner's views on social-emotional development in adolescence seek to relate the fit of fundamental temperamental characteristics to parental and environmental attributes. Lerner and Lerner's projected followup of the original Thomas and Chess (1977; Thomas, Chess, and Birch 1968) child cohort now grown to young adulthood should provide further information on the power of an important interaction that has been presumed to exist.

Petersen, looking at biological data and stress in the course of development, also agrees that the physical changes of puberty are essentially stressful, but she, too, recognizes the value of this critical period as an enhanced opportunity for adaptation and change. This theme of reconstitution is a recurrent one. It is expressed by several participants in the current volume and has recently been strongly emphasized by Wallerstein and Kelly (1980) in their clinical-longitudinal followup study of children of divorce. Petersen's examples, too, are normative as evidenced by her focus on female junior high school students who are faced with the pubertal realities of menstruation and a heightened sexual awakening and are often ill-prepared for the pattern of intense dating and social attraction that are initiated by older junior high school males. As Petersen observes, however, the problems are many, but the amount of research of the effects of stress on pubertal development and vice versa remains negligible.

In Keating's paper on cognitive development, which also treats the reality of normal development, he critically examines and speculates (in the absence of theory and research) on the relationship of cognition to stress and coping. (The interested reader can pursue the extensive elaboration of his views in a recent chapter (Keating 1980) in Adelson's *Handbook of Adolescent Psychology*.) His emphasis on the need to know the nature of normal developmental processes before proceeding to the psychopathology of development is a view that has gained broad acceptance. Nobel Laureate Tinbergen, in advancing it, has suggested that the words of Sir Peter Medawar be used as a motto for such a theme: ". . . it is not informative to study variations of behavior unless we know beforehand the norm from which the variants depart" (Jones 1972).

Goldstein, in his presentation, touches on the roles of the family, drawing on a literature of *both* normal and psychopathological development during adolescence and young adulthood. His research affirms the potential significance of parents' deviant communication, hostility, and ineffective cognitive modeling on the subsequent adaptational outcomes of children.

Hill, too, examines both family and peer relations, pointing out the inevitability of conflict between the peer culture and the parents, with peers replacing parents as the major social influence during adolescence. But he does not accept this conflict as an index of behavioral or emotional disorder except in the more extreme instances of manifest familial pathology.

Kelly's (1979) focus is on the secondary schools as significant influencing agents for cognitive, social, emotional, and occupational development. This emergent form of ecological psychology has recently been furthered by the research of Rutter and his colleagues (1979) who have sought answers to the provocative question: "Why do some schools in disadvantaged locales produce a higher proportion of successful graduates, while other schools in equally disadvantaged neighborhoods serving comparable groups of students apparently fail to do so?" Kelly's analysis of positive school factors adds a central variable to consider in factors conducive to enhancing adolescent adaptiveness.

Langner's epidemiological study looks at environmental stress and concentrates on such variables as external stress, ethnicity, socioeconomic status (SES), family discord, and parental attention and care as factors that help to predict ineffective versus effective coping styles.

Bandura, in his presentation of the role of self-efficacy in promoting effective coping, provides a provocative thesis. He defines self-efficacy as "a flexible orchestration of cognitive, social, and behavioral skills in dealing with situations that contain elements of ambiguity, unpredictability, and stress." Definitions of coping, which exist in multiple forms in the literature of stress, are given a simple declaration by Bandura. "Coping," he asserts, "is knowing what to do in the face of environmental demands." The growth of coping skills is a composite of many functions: modes of acquisition; actual performance in similar situations; vicarious observation of the successful and unsuccessful efforts of others in similar situations; social persuasion by parents who, by fostering overprotectiveness, can persuade a child of incapacity or, by fostering autonomy and facilitating successful experiences, can provide the base for a sense of personal effectiveness; and the child's interpretations of his or her own biological response and vulnerability.

Bandura's account of therapeutic interventions and his ongoing studies on the use of different modes of acquisition add an interesting normative-clinical aspect to his creative and constructive observations. The question he asks provides a rich resource for future research: What do social agencies contribute to efficacy? I would add equally critical questions: How do such social supports mediate the stress-coping patterns of individuals? How are different sources of information used at different developmental levels? Are there changes in the sense of efficacy over the life span? What accounts for such changes if and when they do occur?

Ogbu, an anthropologist, begins with the issue of deficit behavior in selective groups of minority students. He uses his cross-cultural knowledge of social systems to point out that various minorities in different cultures exhibit such deficits. They are not racially determined but rather constitute the burden carried by "subordinate minority castes" irrespective of the culture under examination. His observation that presumed deficits in skills at one level of society may not reflect the competencies requisite for survival in, for example, a ghetto environment, is a critical one. Here other teachings and teachers model a "street-smart" pattern (long neglected by investigators) that is adaptive and effective provided the criteria of competence are not sought for in behaviors that reflect white, middle-class society. Here is a hypothesis worthy of testing in nations beset by racial and social-class animosities.

Hamburg, a child psychiatrist, also assays a normative posture, pointing out that society has expanded the time span of adolescence, once identified as a fleeting one, into a 10-year period that embraces a maximum of biological, social, and role changes. She, too, sees adolescence as a period of opportunity for the reconstruction of personality needs, behaviors, and acts in relation to significant others. Her discussion of diabetes in the young—an area of her expertise—(Hamburg et al. 1980) introduces the richness of behavioral medicine studies as a way into the complexity of an individual's responsiveness to stressful events that may pose great personal consequences.

Susman's discussion of her studies of children with cancer performs a similar function and clearly suggests that the systematic study of physically ill children may be of fundamental importance for elaborating, both conceptually and empirically, the nature of a basic stress-coping paradigm.

The volume concludes with two major longitudinal studies:

1. The 12-year effort by Jeanne and Jack Block to study ego resilience and ego control in children who were age 3 when the study began and have since been seen at ages 4, 5, 7, 11, and 14 (now underway). Interested readers can find an elaboration of this research program in a recent publication (Block and Block 1980).
2. Emmy Werner's study of the children of the island of Kauai is one that has been 20 years in the making. This longitudinal study began with pregnant mothers. Their offspring were examined at birth as well as at ages 1, 2, 10, and 18. Here, too, a forthcoming volume (Werner and Smith, in press) will detail the research program, its variables, instruments, and findings. The issue of stress resistance is implicit in the volume's intriguing title, *Vulnerable But Invincible: A Longitudinal Study of Resilient Children and Youth.*

I can find no better way to conclude this overview than by quoting from the concluding remarks of Dr. Werner. They carry not only a message of hope to adolescents growing up in a stressful society, but also a message to researchers of both stress and adolescence of the excitement and challenge that is in store for those who choose to participate in this vital, emergent area of study:

> Central to coping with inevitable stresses may be a sense of coherence, a feeling of confidence that one's internal and external environment is predictable, that probably things will work out, and that, in a sense, we can control our small world.
>
> The real issue may be whether the families and societies in which the children live their daily lives facilitate or impede the development and maintenance of this sense of coherence. The most optimistic thing we have seen in our study is that, even under adverse circumstances, change is possible if the older child or adolescent encounters new experiences with people who give meaning to his life, who give him a sense of fixity, and who tell him that he matters.

Keynote Address

Richard Lerner, Ph.D.

In his keynote address, Dr. Richard Lerner asked, "Why is the discussion of adolescent development and adaptational stresses so important that so many scholars have suffered so much jet lag just to participate in this Conference?" His answer was "History," as it pertains to the study of human development and its evolutionary changes.

This observation was prompted in part by Lerner's own experience. Only 10 years ago, courses in adolescent psychology and adolescent development were not available in his graduate program, adolescence apparently being viewed as a relatively unimportant period in life. A biased belief existed (and may still be present among some scholars) that only infancy and childhood involve the "key developmental phenomena" and that change and malleability are not integral to adolescence or the years that follow. Lerner commented that "even leading psychodynamic theorists who paid particular attention to adolescence thought of the key features of this period as merely a regression to or an atavism of an earlier, oedipal phenomenon."

Scientists are now foregoing "simplistic, unidimensional and/or unidisciplinary approaches to development," according to Lerner, in favor of "multidisciplinary perspectives about development and change." He cited Brim and Kagan's summary (1980) of this change in focus, which suggests that humans have great capacity for change across the entire life span and that later experiences continually transform the results of events that occurred in early childhood.

This new perspective on development, Lerner believes, rests on two concepts: first, "embeddedness of developmental change," the idea that change at any level being analyzed occurs in the context of changes at other levels of analysis; and second, "reciprocities in change phenomena," the idea that changes in one level of analysis influence changes at all other levels. In other words, the transition from childhood to adolescence, and the character of adolescence itself, are affected by changes both within and around the individual.

Lerner demonstrated how the individual affects and is affected by circumstances involving either family or peers in ecological contexts such as educational or political institutions and in historical and evolutionary contexts. He cited consequences of the trend toward decreasing mean age of menarche presumably brought about by historical changes in nutritional levels and medical and health practices and added:

> Early adolescents, who are physiologically capable of reproduction at earler and earlier ages, do not necessarily achieve formal thought or ego identity earlier. Yet, such earlier maturing youth can, and, in my view, do profoundly affect their families, their educational institutions, and society in general. In other words, the adolescent is altered by historical changes in the social context, but these adolescent changes feed back into the context to alter it. In this way the adolescent both influences and is influenced by his or her social world. And in this way the adolescent contributes actively to his or her own development.

Recent studies of intergenerational transmission of values and bidirectional socialization, the role of the parent's development on that of the adolescent and, in turn, of the adolescent's development in supporting or deflecting the parent's healthy adult development illustrate these relations. As Lerner said:

> Adolescence is a time when multiple transitions occur in the inner-biological, individual-psychological, physical-environmental, and sociocultural contexts. Thus, it is a particularly appropriate time to study the relation between a changing person and his or her changing world. Successful adaptation always involves appropriate coordination between our changing selves and our changing contexts. But it is in adolescence, and particularly early adolescence, that such adaptational stresses may be most critical, due to their simultaneity and multidimensionality.

The speaker predicted that the next decade will involve an increasingly greater focus on early adolescent populations. There are, for example, practical social issues in the alarming increase in teenage pregnancy and of births to unwed mothers, especially those in the 15-year-and-under group; in the sharply higher incidence among early adolescents of venereal disease, especially gonorrhea; and in the greater incidence among adolescents of drug and alcohol use and addiction and of dropouts and runaways.

It is to be hoped, remarked Lerner, that measures used in research on the adolescent period will be psychometrically sound, unlike much adolescent research of the past. More sophisticated researchers will probably be attracted to this field because of its practical and theoretical importance. Lerner feels that competition for research funds during periods of possibly diminished funding opportunities should enhance the quality of proposed research and, eventually, of the literature.

As Lerner observed, "It may be fair to say that the study of adolescence is itself in its adolescence." He reminded the Conference participants that "adolescents are both products and producers of their world. By ignoring them in our theory and research we are ignoring important parts of ourselves and omitting an essential feature of the story of human development. Accordingly, let us, by our scientific actions and words, insure that current and future cohorts of adolescents will not, to use Joan Lipsitz's apt phrase, 'grow up forgotten' by medical and social science."

Individual Development: Its Significance for Stress Responsivity and Stress Adaptation

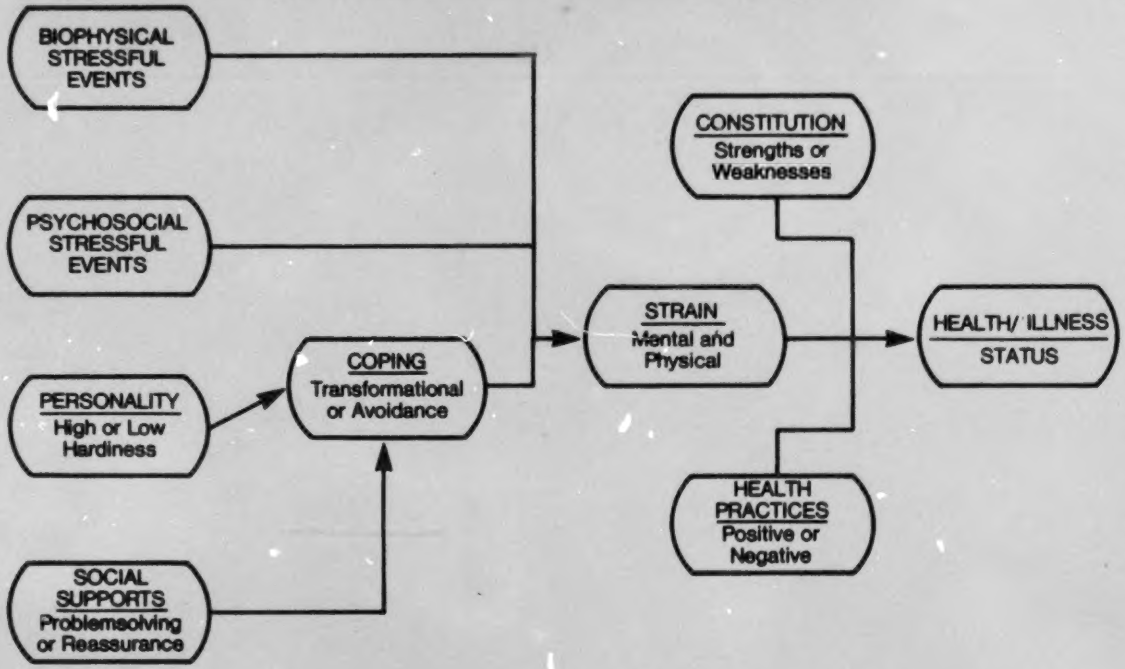
Personality Development

Salvatore Maddi, Ph.D.

The first discussant, Dr. Salvatore Maddi, introduced his talk with the comment that, since his research has been directed to the study of stress resistance in adulthood, he is happily free to speculate upon the implications in this work for stress resistance in adolescence. Maddi presented figure 1 as a model for understanding how stressful events interact with other variables in influencing health/illness status. Stressful events are seen as increasing organismic arousal or strain. Strain, continued long enough, can result in various signs of breakdown, or illness of a physical and mental nature. But several other mediating variables need to be taken into account. Constitutional, personality, and social support factors can increase or decrease the likelihood of illness in the manner shown in the figure. Presumably, personality and social supports can influence the stressfulness of events through the coping process and can modulate the magnitude of strain reactions through health practices.

To Maddi, coping has components of both cognition and action. He differentiates, too, between "transformational" coping and "avoidance" coping. Transformational coping decreases the stressfulness of events that have occurred both through cognitive appraisal, in which an event recognized as stressful is not so terrible after all when set in perspective, and

Figure 1. A Model for Understanding Health/Illness Status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through decisive actions, which are aimed at altering the event to decrease its stressfulness. Coping by avoidance, however, involves pessimistic cognitive appraisal, in which the event may really be "as bad as it seems," and evasive actions, which are designed to distract or remove the person from interaction with the event. Since it does not change the event, avoidance coping must be continued as protection against stress.

Maddi and his colleagues believe, therefore, that transformational coping is more advantageous in the long run. They believe, too, that particular characteristics of personality and social supports increase the likelihood of transformational as opposed to avoidance coping and lead to positive health practices that can decrease strain reactions. Thus, personality and social supports can maintain health by decreasing both stress and strain.

Maddi approached consideration of personality as a factor in adolescent stress management through relevant research on adults. In a prospective study of 259 middle- and upper level male executives of a large Illinois industry, Maddi and his colleague, Dr. Suzanne C. Kobasa, have been investigating the proposition that certain personality variables buffer the tendency of stressful life events to increase subsequent physical and mental disturbance. They are collecting further personality, stressful-life-event, social-support, constitutional, and illness data on their original sample and expanding it to include females, individuals from minority groups, and people from lower strata of the industry.

In each testing session, executives were administered self-report instruments that inquired about stressfulness of events in their lives, their physical and mental health and illness, and personality characteristics. The researchers were concerned primarily with the characteristics they have come to call the "three Cs"—commitment, control, and challenge.

- *Commitment*, whose opposite is alienation, is the general tendency of people to involve themselves in whatever they do, to "find some reason why it's worth getting involved."
- *Control*, the opposite of which is powerlessness, reflects the tendency of people not only to feel as if they can influence events but to act as if they can.

- *Challenge*, whose opposite is threat, has two components. One is the belief that change rather than stability is the norm in life; the other is the belief that change is a needed stimulus to growth.

These three Cs sum up to produce what Maddi and his colleagues call the "hardy personality style."

In their longitudinal study, the researchers used stressful-life-events and hardiness scores from the first testing as independent variables in the attempt to predict illness scores from the second and third testings as a dependent variable. To bolster the inference of "prospectivity" carried in the time lag, illness scores from the first testing were used as a control, insuring that the dependent variable was illness change. Results indicate that while stressful life events increase illness, hardiness decreases it. The interaction between the two independent variables indicates that the buffering effect of hardiness is especially apparent when stressful events mount.

Turning to developmental implications, Maddi contended that the hardy personality must begin to flourish in childhood if adolescence is to be a constructive experience. This is because the child is relatively unformed and can be greatly influenced by parents, and because adolescence is by nature a time of mounting stressful events for which some buffering capability is needed.

Hardy personality development is enhanced by having more positive than negative reinforcement; this suggests to the child that interaction with the surround is worthwhile, thus encouraging commitment. Although parental reactions should come soon enough to fit the child's limited memory capabilities, this does not mean that parents should overprotect. Children must be encouraged to and rewarded for stretching to do things for themselves, in order to otain a sense of control through struggle.

Providing richness of experience is another parental responsibility. This encourages an aspect of challenge that construes life as "a process with variation rather than stability." Here Maddi inserted the caveat that "richness" of experience does not require membership in the upper middle class. In this regard, parents should stimulate their children's capability for symbolization, imagination, and judgment, those cognitive characteristics whereby experience can be interpreted, transformed, and ordered. This accelerates the development of control, challenge, and commitment.

Finally, parents should impose "limits," not in an arbitrary way but according to their own values and views of what is important. According to Maddi, limits occurring along with the other factors he mentioned will suggest to the young that "although life is worthwhile, it is not simple." This especially encourages a sense of challenge.

Maddi contended that if parents do these things, their children will emerge from childhood with the rudiments of commitment, control, and challenge. But these rudiments are untested and nonindividuated, and this is where adolescence comes in. The greater pressures of adolescence and freedom from parental influence provide the occasion for testing what has been learned in childhood and possibly becoming a self-initiating, differentiated person. "I'm conceptualizing adolescence as a little like a trial by fire," said Maddi.

This self-initiated development is further aided by "formal operational thought," as emphasized by Piaget. But the main thing is whether the rudiments of the three Cs are available. If they are, then the "colossal changes of adolescence can have a beneficial rather than debilitating effect," in the sense that the emergence into adulthood will be marked by a consolidated, individuated style of hardiness.

But even with the rudiments of hardiness in place, adolescence will be an extremely stressful time. Adults who wish to be helpful should not try to decrease artificially the colossal changes going on; coming to terms with these changes is an important learning experience for youngsters. Rather, parents and teachers can help by presenting relevant ideology and models. The ideology behind the three Cs is strenuousness, which involves a "distrust of easy security and easy stability," the expectation that "life is by its nature a changing phenomenon and that the person's own capabilities of symbolization, imagination, and judgment are helpful in interpreting and using these changes effectively. The child should come to value the struggle to grow and develop."

A model could be a parent or a teacher—someone whose own life exemplifies strenuousness, whom the youngster admires, and who takes a special interest in the youngster's development. Maddi added, "If ideology and models supplement sound early development, maybe our adolescents have a chance to become remarkable adults."

In elaborating his views on adolescence, Maddi became specific regarding interpersonal relations and the relationship of the individual to the broader society as two important areas of development. "Will the age-segregated peer-group influence, which becomes so important in adolescence, have a beneficial or debilitating effect on a person's development?" asked Maddi. He suggests that pressure from the peer group is generally toward avoidance coping, both because adolescence is an inherently stressful time and because many children do not experience sound early development.

Interpersonal signs of avoidance coping are overdependence on the approval of others, insistence on static relationships, intolerance of unusualness, absence of intimacy, and alcohol and drug abuse. Those without sound early development, who are thereby prone to feeling alienated, powerless, and threatened, may settle into this pattern and develop no further. Those with sound early development may succumb to the pressure of avoidance coping for a time. But they at least have a chance of rejecting or growing out of it, for they will finally be lonely without real intimacy, bored with stasis, cramped by seeking for approval, and unsatisfied by passivity. Maddi remarked, "Finally, these failure experiences will accumulate to the point that the person will have to reject conformity and begin to exercise the three Cs, despite all the pressures and what peers think."

The process of being integrated into the broader society may also be a frightening prospect. Maddi thinks that runaway inflation, the prospect of unemployment, menacing escalation in military preparedness, increasingly serious problems of pollution, corruption in Government, social injustice, poverty, and the like may also be forces that encourage avoidance coping. Such coping is shown in the socially passive view that society has been formed by others and is not worth getting involved in, and that world disaster is imminent. Adolescents who have not experienced sound early development may well settle into such views. Although those with sounder childhoods may do so temporarily, they will "finally bounce out of this alternative to more of an active role within the broader society." They will simply rely too much on the three Cs to manage an alienated and passive role.

As Maddi summarized his remarks, "This temporary slipping into avoidance coping is a developmentally important aspect of the adolescent experience of which adults should not rob the youngster. Because the three Cs learned in rudimentary fashion in childhood have not been tested, the pressures of adolescence are actually useful as a trial by fire. Therefore, it may not be helpful to search for ways to decrease the stressfulness of adolescence. Rather, we should express our concern and support by providing ideology and models. And we should have started the helping process by ensuring rudimentary development of the three Cs in childhood."

DISCUSSION

The discussion period began with Dr. Emmy Werner's agreement that "strenuousness" seems to be rooted in the American way. She wondered what theories Maddi had in mind in his plea to help modulate adolescence by ideology and models. Maddi, crediting William James with the ideology of the "strenuous mood," interpreted James to mean that "life by its nature is a changing thing. We not only understand the changes but influence them by using our own wits and capabilities. Change is important because it's a stimulus to development, the only way true gratification and fulfillment can be reached."

"So that ideology might be different in another country, let us say a developing country, particularly in the East," suggested Werner. Maddi replied that he believes the ideology is important in developing countries and among some members of minority groups in the United States. He added, "As far as the East is concerned, I don't know, because the ideologies of the East are so different from our own."

Dr. Daniel Keating wondered what inferences might be drawn from this theory of development for inner-city and minority teenagers whose control and prospects for challenge may be severely limited. Maddi acknowledged the problems of his position regarding that group, for which changes are large and social system supports for the three Cs meager. He added that "there are times and contexts in which avoidance coping is a necessary step, just to make sure that there isn't any great damage to the organism."

Maddi reiterated his opinion, however, that the three Cs are not limited in applicability to the upper socioeconomic level, "because the kind of teaching and learning that goes on happens close to home" and doesn't require a big budget. It does require a set of values and commitment on the part of parents or significant others. At this point, Maddi suggested a theme which was to recur, in other forms, through several of the talks that followed. "There are many examples of people who grew up poor who made it in a major way. Often, when one reads the biographies of such people, there's an influential adult who really believed in the youngster. Now, what is the reason for that belief? I think it may translate into some of the kinds of things I'm talking about."

Dr. Michael Goldstein remarked that Maddi's research model contradicts some of the Goldstein work and pointed out that the conventional way of looking at coping patterns has been that denial leads to avoidance behavior and that sensitivity may lead to unproductive activity. He wondered, too, about "minimalization of threat, in which an individual facing danger does not allow thoughts of danger to intrude." Many who succeed in dangerous occupations use minimalization but many who fail use denial; distinguishing between the two is important when considering cognitive mechanisms. Goldstein added that vigilance mechanisms also have a degree of awareness, a knowledge of threatening possibilities which leads to instrumental action. On the other hand, a danger may be perceived as so catastrophic that it causes panic and inability to function instrumentally.

To clarify, Maddi replied that the cognitive appraisal expressive of transformational coping is more like the "minimalization" than the "denial" of threat Goldstein mentioned, and avoidance coping is not really hypersensitivity. (Actually, according to Maddi, discounting verbal differences, he and Goldstein may not disagree.)

According to Dr. Albert Bandura, the problem that arises from "cognitive transformation" can be settled if people judge themselves to be "efficacious" in coping with situations. Thus they can approach a situation in a task-oriented way without dwelling on potential hazards or imagining possible failures.

Such an approach will lead to success, which in turn will build a sense of efficacy, or effectiveness, in handling problems.

Bandura expressed a concern particularly applicable to today's young people: the effect of society's burgeoning sense of inefficacy. He cited the "growing dependence on technology so people don't comprehend and don't feel they can exercise any kind of judgment; the growing complexities of social technologies that nearly conceal connection between actions and effect; the growing move toward single-interest preoccupations that make it difficult to mobilize corrective effort for dealing with social problems; and the growing transnational interdependencies in which individuals feel ineffectual." Maddi agreed, suggesting that "a sense of efficacy" is built into what he conceptualizes as the hardy style.

In connection with Bandura's comments, Dr. Norman Garmezy, noting that secular events change the entire longitudinal pattern, wondered whether educational change can sometimes have deleterious effects. He asked Maddi to what extent his theoretical formulation was a function of "the retrospections of a managerial group," since the "hardiness" factor might be very important in a competitive society.

Maddi replied that he and Kobasa had theorized about hardiness before collecting any data. The conceptualization had come out of the "hardheaded version of existential psychology" and William James. Only at that point had they turned to stress research, and executives were selected less because of their ideologies than because of their likelihood of encountering stress.

Dr. Morris Rosenberg observed that "all adolescents experience some stress—some do well and others don't," and noted that the Maddi model suggests that "coping is to some extent a function of personality." In Rosenberg's view this concept is strongly supported by Pearlin's and Radabaugh's study (1976) showing that although people subjected to economic stress are more likely than others to use alcohol to reduce stress, the degree to which this occurs depends on such personality factors as mastery and self-esteem.

"So it's exactly what you showed, the same kind of interaction," continued Rosenberg. "There seem to be at least three personality characteristics that influence coping—hardiness, mastery, and self-esteem. Are these linked? Is there a range of personality? Do you think hardiness is the only important personality factor that bears on coping with stress, or is there a range of such factors?"

Maddi answered that he sees great similarity between mastery and hardiness and that, to him, a hardy person must also have high self-esteem. "It's my feeling," he said, "that we have various leads in our work and Pearlin's. Who knows what the description of a resistance factor will actually turn out to be in the most precise sense?"

In Bandura's view, self-esteem and hardiness can be differentiated, because he sees self-esteem as one's evaluative reactions to one's own behavior. It is possible, he believes, to have a hardy personality without much self-esteem or to engage in behavior that gives little self-satisfaction, a point Maddi found interesting and possibly testable through a sampling of the questionnaires used in his study.

A point of interest to Bandura is the psychology of "chance encounters." To illustrate, he presented the supposition of a youngster who visits a friend in Los Angeles, rings the doorbell, and finds that his friend has moved but the Manson gang is there. The youngster then gets trapped in the Manson gang, "not through any intent but through an entirely chance encounter." Bandura asked, "Under what conditions will chance encounters leave one untouched and under what conditions will they have profound influence? What makes one resistant to the adverse effects of chance encounters?"

Garmezy's reply suggested that the study of stress resistance is essentially *idiographic* rather than *nomothetic*, relating to the unique rather than the universal, because chance encounters can never quite be fitted into an equation. Bandura, however, believed that psychology could develop a model for predicting whether or not the effects of chance encounters would be profound.

Socioemotional Development

Richard M. Lerner, Ph.D.

In introducing his remarks on socioemotional development in adolescents, Lerner stated that biological adaptation *is* social behavior, with organisms selecting and modifying their environments and responding to them. He traced the linkage between social and biological function and pointed out that no form of life as we know it comes into existence independent of other life, and no human lives in total isolation from other humans across the whole life span. Anthropological studies suggest that the relative defenselessness of early humans, coupled with the dangers of living in the open, made group living essential for survival. In an evolutionary sense, acting in concert with the group was more adaptive than isolation; thus, such processes as empathy and attachment facilitated social relatedness and were selected over the course of human evolution.

Lerner mentioned particularly the work of Lewontin and Levins (in press) whose organism-environment interpenetration model includes the idea that organisms select their environments, modify and respond to them, transform their statistical structure, and define them, determining which environmental variations can be combined or ignored. Lewontin and Levins note, too, that the reciprocal interaction of organism and environment takes place through several pathways, and that, for survival and reproductive capability, the organism determines the environment to which it will be exposed.

Lerner observed that just as the organism sets the stage for its own evolution, so humans in all parts of their life span "may be seen as embedded in a social context in which they interact. The social context is composed of other humans as well as social institutions, and all humans within this social context have both evolutionary and ontogenetic bases for their interactive social behavior.

"Adaptation to one's context thus involves bidirectional influences, that is, changes in the context to fit an individual's needs and changes in an individual to meet contextual demands. In other words, fit must exist between the person and the social context if adaptation is to occur."

To explain, Lerner suggested that underlying all social interrelation is the fact that since no single person could efficiently perform all of the functions needed for survival, people began to adopt special functions. From this, social roles emerged. As settings within which humans lived became more complex and differentiated, new adaptational demands emerged for people's self-maintenance and perpetuation. Eventually, different groups took on different roles, making role structure more complex, more specialized, and more interdependent. Children were always instructed in the rules and tasks of their own society to insure their eventual contribution to that society's maintenance.

Various theorists have described the adaptive linkage between person and social context. A major example is Erik Erikson, who views the ego as the aspect of personality that helps one attain competency to perform individual social linkages. Eriksonian or not, most theorists agree that skills requisite for survival in society must be obtained. It is clear, however, that the demands placed on the person are not constant across life.

Lerner observed, "The adolescent period involving so many changes may produce special adaptational demands. The body looks and feels different. The person thinks differently, judges right and wrong differently, engages in different types of social relationships, and acquires new capacities. Defining or identifying oneself becomes essential in adolescence. Identity gives adolescents an integrated specification of what they will do with their bodies, their sexuality, their minds, their relationships, and their morality.

"In turn, society wants to know what socially prescribed sets of behavior, what roles, will be adopted. Thus, finding a role is the key aspect of this adolescent dilemma. This is the basis for what Erikson terms the 'identity crisis.' Erikson sees a synthesis of psychological processes and societal goals and directives as necessary for achieving a sense of identity. In other words, the adolescent must find an orientation to life that fulfills the attributes of self and, at the same time, is consistent with what society expects. Since this orientation must be both individually and socially adaptive, a goodness-of-fit, congruence, or match concept seems salient."

Erickson's ideas about identity crisis and ego development have to some extent influenced most research on adolescent role behavior, including study of whether ego identity occurs in a stagelike progression; focus on changes that may occur in a person's identity status over time; and investigation of the different statuses an individual may have along a continuum and how these may change over a lifetime.

Lerner's review of the literature suggests another area of research relating to ego identity, since Erikson's sequences have not been found to be universal and because individual identity status within adolescence has been found to change. Of all the concerns about variables related to ego development and changes in identity status, Lerner believes the social interaction dimension is particularly relevant.

The development of identity is found to be associated, Lerner said, with cognitive, adjustment, perceptual, and other psychological processes; these interactions may be moderated, however, by the social relations among individuals. He added, "Perhaps this involves the family, since that is the major social institution delivering those societal demands to which the person must adapt."

Lerner mentioned a study of 11th graders which suggested that positive feelings toward parents were generally more related to self-esteem than were positive feelings for friends. Lerner said this may be taken as support for salience of family interaction and identity. He added, "Other studies show that different family structures, for example, presence of a working or nonworking mother or an absent father, are associated with contrasts in levels of adjustment in adolescence or in ego development prior to adolescence. However, they do not suggest what sort of parental or familial functions may facilitate ego identity."

Other studies, according to Lerner, support the view that adolescents with a high sense of identity have less restrictive parents and better child-parent communication than do adolescents with a low sense of identity. Relating this research to his own studies, Lerner said, "Although future research is needed to evaluate the generalizability of these data, it currently appears that an adolescent in a social setting where there is openness in social communication and minimal restrictiveness in looking for his or her own role will attain an adaptive coordination, or fit, between self and society and will achieve an identity.

"Of course, the social setting is, at best, only part of the story from the contextual viewpoint. The person's characteristics and, most importantly, the nature of the relations between the person and the setting—the level of match, mismatch, or goodness-of-fit—have to be considered in any attempt to understand the adolescent's social adaptational processes and the absence or presence of appropriate adjustment."

Lerner illustrated his approach to understanding stress in adolescence with a brief description of the recent work he and his wife, Dr. Jacqueline Lerner, have done with the New York Longitudinal Study (NYLS), which was started in 1956 with a cohort of 133 offspring of mostly white middle-class Jewish parents in the New York University area. Since they took over the study, the Lerners' interest has been primarily investigation of the temperamental attributes of the children over time; their plan is to study parent-child linkages through changes in the child, changes in the parent, and feedback between the two.

Results from the study indicate that particular types of individual differences in temperament or behavior styles are differentially associated in this sample with adaptive psychosocial functioning. For example, there is a cluster of characteristics which places samples of both handicapped children (mentally retarded or those born with multiple physical handicaps due to maternal rubella) and nonhandicapped children at risk for behavioral and emotional problems. The characteristics include low rhythmicity of biological functions, high activity levels, high distractibility, low response thresholds, and high-intensity reactions. Whether handicapped or not, children who have none of these temperamental characteristics and/or have high biological rhythmicity with moderate activity levels, intensity thresholds, and distractibility levels have fewer behavior problems.

The NYLS confirms the other findings of linkages between various temperamental repertoires and psychosocial developmental patterns among both handicapped and nonhandicapped children. However, Drs. Alexander Thomas and Stella Chess, who started the NYLS, believe with Jacqueline Lerner that "if a child's characteristics of individuality match or fit the demands of the particular setting, adaptive outcomes in that setting will accrue."

It follows, then, that children whose characteristics match most of the settings within which they exist should show the most adaptive behavioral development. Alternatively, mismatched children whose characteristics are incongruent with one or more settings should show maladaptive development. Consideration of these findings generated the Lerners' goodness-of-fit model for adaptability. As the speaker noted, "Just as a child brings his or her characteristics of individuality to a particular social setting, so are demands placed on the child by the social and physical components of that setting."

To illustrate, Lerner said, "Teachers and parents may have relatively individual and distinct expectations about behavior they desire in their students and children respectively. Teachers may want their students to show little distractibility lest their attention be diverted from the lesson by the activity of other children in the classroom. Parents, however, may want their children to be moderately distractible, to stop watching television and go to dinner or to bed, for instance. Children who are either generally distractible or generally not distractible thus meet the demands of these two contexts differently. The problems of adaptation to school or to home thus develop because of a child's lack-of-match or goodness-of-fit."

Lerner believes that the desirable behavioral styles of the NYLS sample are fairly generalizable to other white middle-class samples. There are socioeconomic contexts, however, in which the behavioral attributes of children are appraised differently, as several studies have confirmed. One of these indicated that in lower class Puerto Rican settings, behavior considered "difficult" elsewhere is not only not undesirable but may be highly regarded. Further, as compared with white middle-class samples, such attributes are less associated with negative psychosocial development.

In a more direct test of the goodness-of-fit model, Jacqueline Lerner conducted a study (1980) that included assessments of the temperamental attributes of junior high students and of both social and academic demands of the school in regard to those attributes. In addition, both actual and perceived demands were assessed for each of the two contexts. As indices of personal and social adjustment, the researcher also obtained measures of grade-point average; perceived academic and social competence; positive, negative and overall peer relations; and self-esteem in academic, social, and general areas.

Results indicated that subjects whose temperamental attributes better fit the demands of the two contexts showed better adjustment on the measures used than did those whose temperamental attributes were least fit. Most importantly, fit in one context predicted fit in the other. In addition, if the young person believed he or she could meet the demands, that belief was more important for adjustment than actual possession of the attributes that fit.

In summary, Lerner said, "Adolescent adaptation to stress involves more than the possession of a particular constellation of personality characteristics. Instead, general adaptation occurs when the person's behavioral repertoire is congruent to most of the settings within which he or she exists. One must consider the potential transition from one setting to another to understand the adaptational stresses and resources of adolescents."

DISCUSSION

Garmezy's "discussion and questions now" opened a provocative, wide-ranging exchange. Lerner's early remarks, which Maddi said "give a picture of the organism as able to influence its context as much as the context influences it," prompted Maddi's question, "Why should congruence be so important? Shouldn't there be an 'organism/context interaction'?"

"You can't just look at what the organism brings and what the context demands," replied Lerner. "Over time, organisms that adapt will be those that reconcile their characteristics with the environment. One must follow the organism over time and observe how it affects the context and whether a better fit is produced."

Lerner added that he has not yet emphasized the meaning of incongruence and whether or not it shows, as Maddi asked, that "adaptation is not taking place." The Lerners' data, so far, have been cross-sectional and "one-shot." They are looking forward to learning more about such features as congruence and incongruence from the NYLS longitudinal data. "When Thomas and Chess did their last data collection about a year ago, they interviewed 132 of the original 133, which, for those of you who know longitudinal research, is a great testament to their perseverance and devotion to research.

"Because of other interests and methodological orientations when they began their data collection, much of the other half of the 'fit' dimension—the context—had not been considered in the analyses to date. Now, my wife and I will be able to go back and start looking at these linkages through changes in the person, changes in the parent, and feedback with the children, who are now in their early 20s and having their own children."

A question by Bandura raised the issue of how meaningful the terms "organism" and "environment" can be in a genuine interactional model. "If a parent and child interact, who's the organism and who's the environment, precisely? In other words, in the parent-child interaction, who's fitting to whom?"

Each element fits with the other in an adaptive family setting, in Lerner's view. He added, "It is very difficult for me to avoid talking of the elements—what the kid brings, what the parent's orientation is, the effect of the child on the parent, and the feedback."

Dr. Jeanne Block continued the search for precision in the goodness-of-fit theory by pointing out that, in reality, a child must function both at home and in school. She added, "It seems to me that we are not so much talking about goodness-of-fit as the ability to *effect* goodness-of-fit. We have to consider some of the personality characteristics necessary to effect goodness-of-fit. So a child who realizes that the teacher does not tolerate distractibility and modifies behavior accordingly might be called 'flexible.' My husband and I prefer the term 'ego-resilient,' but it seems to me that goodness-of-fit has to be qualified."

Agreeing, Lerner said he would use the words "plasticity" or "flexibility" and mentioned studies of the evolutionary framework which describe how organisms have evolved in ever-greater complexity by an ability to couple and uncouple traits adaptively as needed. In some cases, great integration is useful; in others, sufficient flexibility for uncoupling traits is helpful. At the human level, Lerner added, this ability may be reflected in ego-resiliency, which is recognizing the demands of the situation, seeing oneself as capable, and doing what is necessary.

According to Dr. John Ogbu, the conferees still needed to talk about how both the adapting individual and the individual's group of origin define the situation. "We also have to talk about how communities or groups of individuals define adaptable behavior, instead of simply looking at an individual. That's completely different from the parent-child relationship; this means we will have to define what we mean by 'environment,' which is not just what goes on in the family or in parental relationships. Since an individual has to be socialized not only to survive but to help maintain the group, environment includes much more than just what happens between child and parent."

Among the questions about statistical method and terminology, Werner wondered, first, how one does statistical measures of a person-context interaction or of changing relationships over time with techniques that have a basically linear orientation. Lerner admitted that there is no suitable way, on a data-analytic level, to get at the circular conceptualization he is trying to achieve. He believes, however, that more sophisticated methods can be used, such as structural equation analysis and maximal likelihood procedures, even in a linear sequential model.

Dr. Anne Petersen, referring to Werner's question, agreed with Lerner that the unit of analysis is important, since "social system" is a variable in any study of social system-person "fit." It is necessary, in her view, to "keep the units we're looking at clear," since, over time, adaptation for a single youth may be different from adaptation for adolescents as a group. Petersen added, "I get concerned when we talk about some program that's going to do all this analysis, because I haven't yet seen any statistical procedure answer all these complex issues, and I'm not sure it should. To test it out, as well as think about it, we need to break a process down into elements."

To Petersen's comments, Dr. Beatrix Hamburg added the observation that the matter of outcome variables is significant, as well, because "when you're talking about evolution, the total population is your unit of analysis. This is a totally different kind of analysis from one that looks at the match between a parent and a child. I think one can learn important lessons from evolution, and, given the notion that behavior is adaptation, there is a genetic behavior that acts as the underpinning of our response. In any case, it is well to clarify which units of analysis are to be used as well as what we hope to learn regarding the overall problem."

As discussion shifted to Erikson's concept of identity, Rosenberg stated that he saw no connection between that theory and Lerner's goodness-of-fit idea. He added, "I really wonder whether, after 22 years of struggling with Erikson's concept of identity, we shouldn't either clarify it or drop it. The components of his definition mean that at one time we may be talking about identification of the group and at other times about roles. This means that Erikson himself hasn't decided what he means about identity and acknowledges that he is talking about different things when he uses the term. Shouldn't we make some decision as to what we mean by it?"

Lerner agreed, saying that he was using Erikson's descriptions, not his explanations. "My goal was not so much to continue usage of Erikson's ideas as to show that adolescents do have to define themselves. Erikson's idea, I think, gives us a way of saying the linkage between adolescent and context might be in the adolescent's own definition of self, given the individual attributes of that adolescent and the demands of his or her existence at that time and in that social setting."

"If you defined identity as the individual's definition of self or wish to define self, this would be very clear. It would be something we could work with and it would flow into your own work on the person context. I'd prefer your definition to Erikson's," said Rosenberg.

Later, Hamburg commented that Erikson was actually considering adolescents as a "unitary phenomenon" but believed he was talking about the universal. "He didn't understand that he was a 'lumper' and not a 'splitter.' The portion he has described is of the late adolescence of the white male, who was very much like Erikson at that time. When one does 'split' and look at early adolescence, the notion of consolidation of identity is not relevant, because early adolescents don't even have a body image, which, along with such aspects as role experimentation, is one portion of the identity. I think we should question the utility and universality of talking of adolescence in a unitary way."

Biological Development in Adolescence

Anne Petersen, Ph.D.

Dr. Anne Petersen remarked that she appreciated the opportunity to examine the relation between stress and biological development at adolescence, the most fascinating aspect about the relation being the numerous possible interactions between the two. To explain, she indicated the potentially stressful effects of biological change on psychological development and of psychosocial phenomena on biological factors in adolescence. "Everything from juvenile delinquency to so-called adolescent turmoil to moodiness in the adolescent has at some point been attributed to biological change. These attributions suggest that puberty itself is stressful. Pubertal changes signal the advent of adult appearance as well as maturing reproductive capacity. I think that we can view these changes as an opportunity for adaptation; they are not necessarily negative," said Petersen.

Most of Petersen's work* has emphasized the effects of puberty on other aspects of development. Recently she has become interested, as well, in the effects of the environment, or psychosocial phenomena, on biological aspects of adolescence. Anorexia nervosa provides a dramatic example of the impact of psychosocial stress on the biological system of the adolescent. Although psychosocial factors appear to be the etiologic key, the disorder affects the biological system, stopping functions such as menstruation—"the reproductive system is the first to shut down when there is stress." Petersen and her colleagues hope to learn more about this disorder.

Petersen mentioned that an association has been shown between physiological indicators of stress and a behavior pattern of arousal in children. The pattern begins in infancy, clearly indicating that "the system is set up to link biological and psychological aspects very early. Further, recent evidence suggests that living under stress begins to cause deterioration in the body as early as the second decade of life. And the research of Karen Matthews and others (1980) shows that behaviors linked in middle age to heart disease have apparently similar patterns among children and adolescents."

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*For a theoretical background and a discussion of the influence of puberty on psychological adaptation, see Petersen and Taylor 1980.

In the Michael Reese Laboratory for the Study of Adolescence, recent research (Spiga and Petersen 1981) of fourth- and fifth-grade boys with behavior patterns that are called "Type A" in adulthood (that is hard-driving, competitive, impatient, and aggressive) showed that these patterns are related to hyperarousal and to stresses in the psychosocial environment. This seems to corroborate the finding that "psychological stress can affect biological systems in a dramatic and extreme way and chronic stress begins deterioration of the biological system as early as adolescence."

Petersen admitted her initial surprise that relatively little research had been done on either the effects of stress on pubertal development or the effects of psychosocial adaptation on pubertal stresses. She said, "I thought naively that the way to find out about how many adolescents feel about these biological changes they're going through is to ask them. We did, and I quickly learned that this issue is a kind of social taboo already held by youth in the sixth grade.

"The whole issue is more complex than I had originally thought. But the scarce research on the topic is consistent with our observations that most people, parents and children, are uncomfortable if not embarrassed with discussions of pubertal change. We've been struck, too, by the frequent connection made between pubertal development and sexual development, an understandable confusion that may be part of the reason for the discomfort about pubertal change."

Little evidence has been found as yet of direct effects of changing hormones, possibly due to the state-of-the-art, in Petersen's opinion. She said, "I don't think it would be fair to say that no direct effects exist, since biological change might, in fact, directly influence cognitive processes or adaptive phenomena, but until relatively recently we haven't had good methods for observing these changes. The use of radioimmune assays may help in these studies.

"We might, for instance, look at endocrine changes during this period; we need to investigate the rapid episodic fluctuations of luteinizing hormone that occur early in puberty during sleep. These changes are easy to note endocrinologically, and if there are effects of hormones on psychological phenomena, this might be a good starting place for investigation.

"Biological changes might have more impact due to their social stimulus value, through what we call 'mediated effects.' These effects relate primarily to the visible physical changes of puberty and to their social and psychological stimulus value. Early maturation in girls, for instance, might have different effects depending on parental, peer, and individual attitudes about pubertal change and on such other factors as the girl's gender identity and the kinds of athletic and other activities she prefers.

"This discussion of a model for biopsychosocial development was really a cruder version of the sort of thing Richard Lerner was talking about with his term 'embedded reciprocity.' I also like John Coleman's focal theory (1978), which discusses the importance of timing of the various changes that occur during adolescence; if they occur sequentially, he argues, they are probably adapted to more easily than if they coincide and pile up."

Expanding on this thought, Petersen cited an example from recent research (Simmons et al. 1979) which showed that girls who had entered junior high, started menstruating, and begun dating were more likely than other young people to report low self-esteem and to have both behavior and scholastic problems. "For these girls, things were sort of piling up and they were not really adapting."

Another factor Petersen saw as necessary for a review of adaptation to biological changes was prior vulnerability, since a child who has developed well up to puberty is probably better able to deal with changes than is one who has had difficulties. Yet another factor was gender, because puberty has different meanings for boys and for girls. Boys look forward to the growth and seem pleased with it; girls, for whom there are "no easy generalities" except that they want to be like everybody else, are usually ambivalent.

The stressfulness of transition from one school to another was easy to determine in Petersen's study. Part of the middle-class sample was drawn from a community with two middle schools (grades 6, 7, and 8) in which students had already made the transition; in the other community, students moved from elementary school at 6th grade to a junior high. The middle-school children had "better emotional tone" (less depression) than children who were making the transition.

Petersen gave several examples of how pubertal changes affected the young adolescents in the group she has been investigating:

- Breast development: Interviews with both mothers and their daughters revealed that the "cultural norm" was to wear "layers and layers of clothing when they were beginning bust development. Looked at on a case-by-case basis, the behavior seemed bizarre, but when you see the overall pattern, it's conformity to a peer norm."
- Body image: Young adolescent girls have a poorer body image than same-age adolescent boys and older adolescents, according to this research and other studies. "In fact, a girl's body image became more negative in a linear fashion with every additional biological change. If there's any generality, it might be that maturation is tougher on girls than it is on boys, mainly because it occurs earlier."
- Sex-role identity: "So far we have found that sex-role identity does not mediate at all the effects of pubertal change in relation to body image or self-image for girls." It did have some effects on self-image among boys.
- Parental responses: Parents' self-reported comfort in discussing puberty in relation to the child's body image showed that the fathers' comfort was unrelated to the body image of either girls or boys, and that, actually, they didn't talk much about it. Mothers who indicated that they had not discussed puberty with their children, or reported that although they were comfortable discussing it their children were not, had children with significantly low self-reports of body image. By contrast, easy communication between a mother and her child helped to check decline in body image.

The speaker and her colleagues plan to continue their data collection and analysis with studies of other aspects of the problem such as the effects of pubertal change on cognitive development and functioning and also the processes linking timing of maturation with various cognitive changes.

In closing her talk, Petersen said, "From the limited data that are available, there appears to be some stress associated with pubertal change, and I'm using the word 'stress' in terms of a change that requires a response.

"We need to consider the possibility that a particular kind of mediator could either augment or diminish adaptation. For example, parental support of the pubertal role could enhance the child's mental health whereas responses to change of either denial or discomfort could decrease it. These are two levels of linear variables that we hope our models can test."

DISCUSSION

The subject of maturation elicited a number of comments. Dr. Elizabeth Susman, for instance, confessed to "becoming increasingly uncomfortable with the idea of early and late maturation—how do you assess early and late? One can look at chronological age differences and pubertal age differences based on endocrine function tests, but even with those, a child may function at one level on a neuroendocrine measure and at another level on a sex-hormone measure. As another example, a National Institutes of Health scientist studying children with leukemia found that some were on time in endocrine change but off in terms of their growth spurt. Is it possible that the crucial variable may be the perceived change? Does the child perceive being on time or off time?"

According to Petersen, a scientist in the Michael Reese Laboratory for the Study of Adolescence had found perceived change to be the most important variable in terms of self-image and body image (Wilen and Petersen, in preparation). Petersen believes the key to this measurement depends on the facet being examined. "If you're looking at the psychosocial system, physical appearance is probably the thing to examine, because that has the stimulus value. If you want to examine sex or mental processing, however, and think these are direct effects, you probably will prefer to use an internal biological measure. Methodology and ethics limit our choices, but I think it's important to think through the outcome."

Rosenberg, too, requested finer precision in defining "early" and "late" adolescence. "Our findings indicate," he added, "that the children hit hardest were the 12- and 13-year-olds, and, to a lesser extent, the 14-year-olds. Have you compared early and late adolescents in your study?"

Her group expects to do comparisons of this kind, according to Petersen. She said that some of Daniel Offer's study of adolescent boys (1969), a forerunner of her own work with early adolescents and with girls, addressed the issue of whether adolescence is "tumultuous for all kids. Offer found that it is *not* tumultuous for all of them. It was tumultuous for some, of course, even starting with middle adolescence."

Petersen is fascinated with the response she and other interviewers have received to their request to compare "right then in the interview with how it was a year ago and the year preceding. We're going to ask that every year. It looks as if, after analyzing our data, we will find that the children will always say that now is better than it was. I think that says something about adaptation and maybe denial."

Block recalled that Petersen had stated that the span of the pubertal process is 5 years, on the average. She inquired whether the duration of that process is as long for early developers as for late. Petersen said that studies that have produced quite accurate measurements of pubertal changes using bone age or skeletal growth have found no correlation between time of onset and duration of the period.

These questions and answers led to consideration of the current prolongation of adolescence. As Werner said, "In our society the age of reaching menarche is decreasing appreciably, at least in upper middle-class girls. At the same time, in our culture, there is an artificial extension of adolescence, almost to age 25. We seem unique in human history in that we have earlier biological maturing—in males, as well, I assume—and then almost a 12-year extension of the adolescent period. Has anyone addressed this?"

Petersen responded that she doesn't know whether this has been studied, although there have been comments on the phenomenon. She added, "It's very important to keep this in mind when we're studying adolescence. It is an expanding age if we define it as beginning with puberty and extending to the assumption of adult roles." Dr. Jon Rolf, an observer from NIMH, pursued the question further: "I have not heard yet how you define adolescence. What criteria do you need in terms of pubertal signs, of development, of economic achievement? Would a self-employed, self-maintaining 18-year-old be an adolescent by definition if he or she has attained puberty? It would be helpful in advancing research on adolescence if we could state criteria. Different systems accelerate at different rates; no one person is ever quite the same again, and no one is quite the same as his neighbor. We are trying to study what is stressful to rapidly, complexly changing individuals."

"It is complex," agreed Petersen, "because the young person who is not pubertal is still experiencing other things that are expected by normative adolescents."

"This is what I mean," said Rolf. "If males are, on the average, 2 years later than females in achieving puberty, and males are more advanced in terms of concrete operations and perhaps formal operations by the time some of their sexual changes come along, perhaps they can understand these changes better and have a better projection of time. Thus, adolescence may not be as stressful for boys as for girls."

Adolescence can be thought of as "a comparatively new invention," according to Rosenberg, because of the novelty in human history of the long gap between the beginning of pubescence and the age of marriage, which usually occurs later than it did in earlier generations. Maddi suggested building on this premise and defining adolescence socially before charting cognitive or biological development. Petersen could see no advantage to such a method. In her thinking, the definition of adolescence should be linked to the factors being studied, such as peer groups or biological maturation rate, rather than using global definitions.

Hamburg took issue with the suggestion that adolescence is an "invention," saying, "If it's an invention, it's an invention of somebody other than the Western world. There is in fact, an adolescent in the monkey and the primate." To buttress her point, Hamburg mentioned studies at Stanford of chimps in "a quasi-natural context in which blood data and metabolic ages were analyzed. Recently published information clearly shows in the males that pubertal changes are related to a rise in sexual behavior."

Concerning the earlier onset of menarche, Hamburg reminded the group that the more affluent, healthier groups "flattened out about 10 years ago," so that the average age of onset is now about 12 1/2. Hamburg finds the explanation of the tremendous escalation of sexual activity elusive, even though the escalation can be indexed easily by surveys, VD reports, or pregnancy data. "It is not possible to explain this on a purely biological basis, although obviously there is a biological substrate for it."

Ogbu commented that our definition of "old" begins at 65, with people "trying to make themselves younger and younger." He suggested that, since all ages are viewed differently in different classes and some ethnic minorities, perhaps we need to define adolescence accordingly. "Some groups enter adolescence very early, so we must understand each group's definition."

In agreeing, Petersen said that Ogbu's suggestion calls for a focus on the dimensions rather than the labels of adolescence. It also serves as a reminder that taking on adult roles is important. Researchers should question how individuals function at such a turning point rather than saying, merely, "Here is an adolescent." Further, they should look at the underlying constructs rather than labeling a group as "adolescent" with the feeling that nothing more needs to be known.

The discussion closed with Keating's comment that recent reviews on adolescent development highlight the degree to which the social definition of adolescence is critical in terms of adolescents' perception of themselves, adults' perceptions of them, and the effect of both perceptions on adolescent behavior.

Cognitive Development

Daniel Keating, Ph.D.

Dr. Daniel Keating said he had endured some stress himself in finding "something reasonable to say" in terms of the connection between stress and adolescent cognitive development. He suggested that researchers of cognitive development have no "viable grand theory" or large-scale empirical studies that connect adolescent cognitive development to stress responsivity or adaptation. His talk, which described major current approaches to the study of adolescent cognitive development was drawn largely, he said, from his review paper (1980) in Adelson's *Handbook of Adolescent Psychology*. Keating spoke, too, of his "speculations that cognitive growth during adolescence may be a source of additional stress as well as providing ways of coping with stress."

The three major approaches to the study of cognitive development, in Keating's view, are the psychometric, the Piagetian, and the information-processing. The psychometric approach shows, for instance, that children with higher scores on development and ability tests during adolescence tend to be better adapted in many other ways as well. Keating does not believe that psychometric assessments, on the whole, were designed to measure "the kinds of things we want to know" in this discussion. The Piagetian and information-processing approaches, on the other hand, "are potentially much richer for understanding the question at hand."

Keating explained the Piagetian approach by suggesting three broad changes in cognitive development, all of which are related to Piaget's theory of the development of formal operations during the period that, "at least theoretically, commences in early adolescence and ends in late adolescence." The changes are:

- An increase in planning and foresight—"The adolescent is more likely than the child, either spontaneously or with less prompting, to be able to think through the consequences of problems. This may not always appear but does seem to be more evident, at least, beginning in early adolescence."
- An increase in ability to draw logical inferences, or to do hypothetical reasoning: "In a wide variety of tasks that require fairly complicated logical inferences, using standard test approaches, it is clear that adolescents have a considerable advantage in dealing with such problems."
- A generally expanded cognitive horizon: "Adolescents generally encompass far more of the world that's out there than do younger children."

The consensus concerning the information-processing approach is that each major feature of the human cognitive processing system undergoes continual changes during adolescence. Some of its features are more efficient processing at a basic level, such as long-term memory (LTM) retrieval or short-term memory (STM) scanning; an ever-increasing repertoire of cognitive problemsolving strategies and easier access to that knowledge; an increased knowledge base; and, as Keating put it, "an executive monitor of some kind, a control process that directs the system so that it, too, becomes more sophisticated during the adolescent years."

Keating noted that such arbitrary divisions might bring arguments, but he believes those he used are fairly common; in any case, improvement during adolescence shows up in both Piagetian and information-processing systems. He admitted, too, that there appears to be some overlapping, "only different terminology," in the two formulations. "People have begun to realize that just getting performance descriptions is not really going to be adequate in terms of understanding development, so we have to come back to some issues that got put aside in the rush to Piaget some years ago. One issue is that of learning and acquisition: How does one get to be a sophisticated problemsolver? How does one acquire a particular knowledge base? These questions may be the most interesting ones in terms of finding our relationship to stress. That has to remain a promissory note."

In view of the many different perspectives on how the cognitive system deals with stress, Keating used a 1979 review by Averill as a departure point for his remarks. According to that summary, three aspects of cognitive activity are central to coping sucessfully with stressful situations. The cognitive activity should:

1. Increase predictability of the potential threat, stressful situation, or stressful life event. Both Piagetian and information-processing approaches would agree that adolescents would be more able to understand the connections between present and future events than would younger children because of adolescents' increased ability in planning, inferential skill, and strategic thought.
2. Facilitates modes of coping, which Keating understands to be transformational rather than avoidance ways of coping. Keating's proviso is that supporting cognitive strategies used in dealing with the adolescent should be based on specific information appropriate to problems the adolescent must face; for example, "the adolescent might be cognitively capable of handling and benefiting from fairly sophisti-

cated information about intimate relationships and sexuality."

3. Lead to a more benign appraisal of potential threat. "If the individual is able to perceive what's going on and render it more benign by understanding it, the negative, anxiety-provoking aspects of stress will be reduced," said Keating. For example, adolescents' increased cognitive sophistication can ease childhood fears; in other cases, the perceived threat may be hard to see as "realistically benign." The socially isolated adolescent, for example, may come to appreciate more clearly the threat of that isolation to his or her well-being but may be powerless to change the situation. The speaker reminded his listeners that this corresponded to their earlier discussion concerning the general preference for transformational rather than avoidance coping but that coping through avoidance may be the only possibility in some situations.

As reported by Keating, Averill had also discussed three ways in which a consciously guided approach to a stressful situation may succeed in reducing stress. First, the individual must *know that the response is available* and that the increased cognitive sophistication of adolescence has furnished the behavioral repertoire with the capacity for dealing with a wide variety of situations. The second requirement is *knowing how to execute the response*. Here practice might be helpful, suggested Keating, who thinks this has been overlooked "even in information-processing approaches." He explained that the adolescent might *know* the particular response appropriate for a given situation but might not have learned how to *implement* it. A great deal of information stemming from the literature on social cognition suggests to Keating that knowledge of the social world and of interpersonal relationships alone is not sufficient; individuals who may be cognitively sophisticated in that realm may not have had practice or experience or be able to furnish the appropriate behavioral response.

"Some people have used the terminology 'hot cognition' and 'cool cognition,'" said Keating. "In reality, when you're confronted with the social situation, you may not have the luxury of reflecting on what your response ought to be—it's almost like a motor skill. Being able to execute the response doesn't necessarily come automatically." The third guided approach to individual stress reduction is ***knowing the expected outcome of a response***. This relates to former comments about predictability and the increased cognitive sophistication and foresight that usually come with adolescence.

It would be interesting to know, remarked Keating, which aspects of cognitive development during this period would provide the greatest leverage to help adolescents cope with stress. He added, "It is apparent that a wide range of potential interventions may be activated by this increased level of cognitive sophistication. But, given that we have the silver lining, let's look at a couple of clouds."

Keating thinks that the cognitive changes that might help the adolescent cope with stress may also provide additional sources of stress during this growing period. "The first way this could happen—and according to some astute observers does happen—is as a fairly direct concomitant of the cognitive changes; adolescents are simply not ready to handle all the implications of their new cognitive power."

As an example, Keating cited Elkind's description (1974) of what he calls "adolescent egocentrism," in which acquiring the ability to take other people's perspectives may lead initially to the individual's assumption that he or she is the focus of everyone else's perspective. Anecdotal evidence suggests that the self-consciousness or awkwardness attributed to early adolescence illustrates this stressful response.

Keating added, "This is complicated by the fact that often that may not be egocentrism. They may, indeed, be the focus of everyone else's perspective, particularly if they've done something dumb. There may be good reinforcements such as ridicule by other adolescents to bring one into conformity with the norms. Elkind refers, of course, to the feeling of egocentrism if taken to excess, but you can see how that may create stress that did not exist before."

The identity crisis, discussed earlier by Lerner, may be another example of possible stress resulting from this increased cognitive capacity. As Keating said, "The potentially stressful problem of figuring out who you are and where you want to grow is one that probably doesn't arise until you've got the cognitive sophistication to ask the question."

The third way in which these cognitive changes can produce stress is more indirect but no less real. "The real world *is* often stressful. There is a reality that the adolescent may not come to realize until he or she has the cognitive power and increased knowledge to comprehend it. The full impact of the world's tribulations is not something that troubles children. I don't think this implies that we should protect children or adolescents from that knowledge, but it comes back to the issue that was raised earlier: How does the individual adolescent develop an ideology that helps to cope with a reality that often may not be pleasant?"

The implied solution, according to Keating, is not to protect adolescents from knowledge but to provide them with as much accurate information and as many ways of thinking about it as we can. He added, "Unfortunately, as a kind of digression, you are probably not aware that there is a good deal of educational research that suggests that we tend to do pretty much the opposite."

Recent analyses of U.S. history textbooks (Anyon 1979) indicate that we provide "whitewashed information." As Keating said, "We tend to give young people an incomplete picture of what they have to deal with. Even though most individuals would not argue actively for protecting adolescents from information about the real world, that is, in reality, what the educational system tends to do. I think that those analyses are the tip of the iceberg; we are likely to find similar patterns in other areas that impinge on the adolescent's development and understanding."

Keating emphasized the value of consistent information presented to adolescents in a "way that's rigorous and justified by evidence." He commented further, "I think that too often we underestimate the adolescent's ability to cope with a wide variety of situations, and we try to finesse them in terms of the information we provide. Also, if information is going to be useful, it has to be sufficiently specific to be acted upon." The speaker ended his talk with the admonition that practice with a variety of coping strategies is crucial. "Simple recognition of the necessity of coping is insufficient; in fact, the individual needs exposure and consistent practice to cope successfully."

DISCUSSION

In relation to Keating's last point, Lerner voiced a trenchant concern of many of today's teenagers. He noted that the plight of the early adolescent unwed mother might be a good example of the way limitations in cognitive functioning could significantly exacerbate problems. Lerner observed, "These girls—13, 14, 15—are characterized by concreteness of thought. They have difficulty conceptualizing changes and the bidirectional effects that exist between themselves and their children. It has been shown that the caregiver function can cause severe stress. The mother doesn't understand what's going on, doesn't understand the infant. This can lead to a breakdown of the mother and, I might add, it's not going to be very good for the infant. For this group we could provide specific information about the nature of infant changes and the effects of infants on mothers, and then try to teach them the specific skills they need to capitalize on this knowledge."

Keating agreed that such a specific approach would be more productive than "global attempts" at changing cognitive structures. Garmezy mentioned the findings from a study recently completed by his wife, a social worker and principal of a high school for unwed mothers. The study was designed to determine what happens to the mothers 3 or 4 years after delivery, how they look back on the experience, and what they perceive as their needs.

Garmezy continued, "The social worker, typically, has been the primary professional in early contact with the mother before the birth of the baby; these mothers report that what they really want is a public health nurse, because the mother wants to know what to do with a baby, how to keep it, and bathe it, and so on. This is an important aspect in stress reduction for a very vulnerable part of our population."

Block commented that people working with adolescents should not assume that achievement of adolescence automatically includes achievement of formal operations. Bandura agreed and said a different view of the role of thought in relation to stress should be taken. The view should deal more with identifying adolescents' cognitive strategies, how they assess situations and learn to cope with them, and how they use their cognition to help with coping.

"One problem is that people live too much in the fearful future or in a different past rather than focusing on current developments. Consequently they run off cognitive scenarios that continue to generate stress," said Bandura. "Another problem is that social conditions at the present seem to be changing so that it's harder to achieve predictability and much harder to achieve controllability. Also, there's very little room for error now."

Part of stress at the present time, according to Hamburg, is the widening discrepancy between expectation and the reality of achievement, a situation due in part to the "impact of mass media as a socializing influence, which puts a whole array of possibilities into the individual's cognitive structures."

Keating added that, in his view, we add to adolescent alienation in yet another way, by attempting to protect adolescents. For one thing, "We cut them off from their real roots, their real background. Thus, these youths eventually come to understand their background in a distorted fashion." When asked to explain, Keating referred to Anyon's review of history textbooks, particularly to their handling of labor issues, which are mentioned, if at all, in negative terms. Since the majority of people are, broadly speaking, from the working class, young people should be given more history of that background.

Another example of protecting adolescents in the wrong way, observed Keating, is the "scare tactics of an earlier era regarding drug usage, in which information was hyped up and not based on evidence. Adolescents eventually saw through this and discredited anything they heard later."

In Maddi's view about the "general constricting of life's possibilities, occupational priorities should be reconsidered. It isn't necessarily so that only certain jobs are worth doing. We should reconsider the deployment of time and energy in occupational pursuits as opposed to other human pursuits. For instance, where jobs are not so available or lucrative, how do you define life as worthwhile? You define it some other way. Presumably, all sorts of transformations are possible in this case."

Referring to earlier discussions on Piaget's formal operational thought, Maddi said, "I don't dispute that you find many midrange adolescents who haven't reached full operational thought yet. I wonder whether part of the sense of discrepancy we have when we look at Piaget's statements may be because he was making statements for a different society, in a different time than our own. To what degree do formal operational processes depend on education and, if they do, to what degree should we focus on what's happening prior to adolescence in this country?"

Keating replied that different interpretations of formal operational thought might depend on the year in which Piaget was writing. He added, "It's the same sort of thing we mentioned in regard to the elusiveness of Erikson's theory. In his 1972 paper in *Human Development*, Piaget seemed to admit the importance of some educational input, or at least of certain experiences in order to develop what looks like formal operational thought. However, I don't believe this theory is the place to look for an explanation of important activities in adolescent development."

Dr. James Kelly suggested that redefining the pressure adolescents often feel about their futures might diminish their stress. He explained, "High school students often have a sense of what they're going to do next week or next month; next year may be the farthest horizon. They should be given a sense of development over time and encouraged to think more broadly so that they will not be trapped by the fiction that they must have answers next week or next month."

Cognitive development implies cognitive advance or improvement, in the view of Rosenberg, who has found changes in children's notions of the "locus of knowledge, where the truth lies." He explained, "I have talked to younger and older children with regard to this basic question: Where does truth about the self lie? I have asked such questions as: 'Who knows best what you're really like down deep inside?' Younger children are more likely to say, 'My mother knows best about me.' If they have such faith in adults in this regard, they must have even greater faith in their understanding of the facts of history, physics, chemistry, the nature of the world, morals, or any body of knowledge that exists."

Rosenberg continued, "I have found in other material that the young child believes that somebody, the adult, knows the truth and knows the difference between right and wrong, be that moral or factual. That faith does not disappear when the child reaches adolescence, but it declines precipitously. To some extent, there's a shift over to peers to get a knowledge of right or wrong, possibly in the realm of fashion or mores.

"It's untrue that the adolescent completely abandons the adult, but the faith is less religious and more rational, based on respect for what adults know. A fundamental basis for confidence in knowledge declines when the older child has achieved enough cognitive power to realize his parents aren't so smart and don't know everything. Now I wonder whether this isn't a source of strength, because the child has to rely on his own resources (or on the resources of his peers in whom he also has little faith). But having to deal with problems personally, now that he or she understands the limitations of adults, can be a source of stress."

After expressing agreement, Keating mentioned a recent longitudinal study of mastery motivation by Susan Harter (1978) which he believed to be relevant to the discussion. The researcher, investigating children's perceptions of source of knowledge and control of events, found that the classic shift of control from parents to self and possibly peer group is challenged by a growing belief in random control at about the time of shift to middle or junior high school. The predominant response to the question of who's in control and who makes things happen is: Nobody.

Keating reminded the group that this is a single finding, not yet replicated, then added, "I would feel much more comfortable if I thought they were saying, 'Now I'm in control,' or 'My peer group is in control,' but they're saying 'Nobody is in control.' I think that may be the most stressful of all."

Calling this "an important area that needs more work," Hamburg reported on a study that found adolescents' attitudes about "stylistic" issues to be peer mediated but their basic values to be consonant with those of the parents. These findings were a surprise since the parents had underrated expectations of consonance. Hamburg mentioned other data showing that good communication between mothers and daughters postpones initiation of sexual activity or, if such activity has begun, produces more responsible use of contraception.

"So I think," she concluded, "that this automatic assumption that there is a gulf, developmental and inevitable, needs to be looked at carefully, because there are many implications about support to adolescents."

"Remember," said Rosenberg, "there can be faith but it can rest on different grounds," to which Hamburg responded, "I'm saying we need to understand a lot more."

The discussion ended with laughter when Langner commented, "I want to thank Dan Keating for helping increase my fantasy life. I had a picture of somebody with hot cognition who is shown the tip of the iceberg in life stress and melts it down."

General Discussion

Howard Moss, Ph.D., Leader

In comments upon opening the general discussion on individual development, Dr. Howard Moss said that the meaning of stress needs to be made more explicit. He observed that it had been talked about as an objective external event, but from a psychological point of view there should be some idea of the meaning of stress to the individual, since the same phenotypic experiences cause different reactions in different people.

"We can look for a number of endogenous characteristics that probably contribute to the individual differences of either modulating or amplifying similar events," said Moss. "I think biological factors as well as emotional reactivity or temperament should be considered. Individual differences contribute to the degree that people perceive an event as stressful. Cognitive factors are relevant, such as whether an event is a novelty, in itself a possible cause of a more stressful response. Motivational factors should also be considered. Some individuals thrive on stress; they seek it out and generate it so that it becomes a way of life."

Moss suggested that a taxonomy of stress would be useful for research in this area. Different stressful events probably require distinct coping mechanisms and internal processes from each individual. Such a classification should make the following distinctions:

- Normal developmental stress: Individuals in different stages of life have to master developmental challenges inherent in that stage of life. Mastering and dealing with these challenges could constitute stress for the individual.

- Chronic stressful conditions: This classification might include serious chronic illness, a handicap, extreme poverty, or feelings of "second-class citizenship" because of minority status. Response could be different from that elicited by normal developmental stress.

Moss gave an example from his laboratory's study of seriously ill children. "By talking to parents beforehand we anticipated that this situation would be turbulent and disruptive for the children. It's been surprising to see the way many children have assimilated the crisis and adapted. On an outward, superficial level, there appears to be an acceptance of the situation and thinking about going on with life.

"It's interesting and encouraging," Moss continued, "to see the resilience in children, but it makes one wonder about the mechanisms required to deal with this sort of stress. For instance, is certainty an issue? Once there is certainty, does this in some way reduce the stressful aspect of the situation or does it lead to habituation?"

- Severe unexpected stress: Individuals experience turbulence of some sort in all stages of life. At present, adolescents are concerned about their future whereas their elders may be concerned about job attainment or job loss; all feel stress because of the general economic situation.

Moss commented on Petersen's account of the adolescents who denied finding this period of their lives to be turbulent. He wondered whether the general cultural assumption that the adolescent period is inherently difficult isn't somewhat of a myth. Suggesting it might be interesting to learn what exists in adulthood that leads to this conjecture, Moss questioned whether such an attitude may not create a self-fulfilling prophecy in the adolescent.

"One may wonder whether this emergence from childhood to adulthood may be threatening and anxiety-producing for adults. Perhaps part of what's going on may be a reaction to this."

To elaborate on Rolf's discussion of the definition of adolescence, Moss suggested that attention be given to other terminology conferees had been using—"adaptation," "adjustment," and "vulnerability"—as well as "stress." He called the concepts seductive and appealing but wondered how much agreement there might be on their meanings.

DISCUSSION

Returning to the issue of adolescence as stressful, Dr. John Hill recalled that adolescents a generation or two ago were viewed as being under particular stress because of the invention of the H-bomb. He questioned whether factors we see now as threats to young people are any more significant.

"I think that point is nicely handled by the social historians," he said. "They have taken delight recently in pointing out that every generation of American intellectual since the 1820s has believed that the American family was going down the drain and things were worse this decade than they were the decade before. And the second social category that is going down the drain even faster is the adolescent.

"Somehow every generation has repeated that kind of assertion. I think there may be a lesson about how seriously we take the concerns of our current historical cohort in thinking about present problems of adolescence as special and unique as opposed to, for example, such enduring issues of adolescence as separating from families or dealing with their own sexuality. These have been stressful in every generation. When we point to sociohistoric events that seem of such moment in our time and place, perhaps we should determine their relationship to the more enduring developmental issues. Otherwise we're talking on two sides."

The group was reminded by Jeanne Block that even though health records of the general population are improving, "the only population group for whom mortality is increasing in this Nation is adolescents, due to suicide, homicide, and accidental death." She continued, "I agree with everything you said—even Aristotle made some scathing remarks about the adolescents of his day—but I think we must look at what's going on with adolescents right now, since their mortality statistics are countercultural." Block added that accidental deaths are highest in the 15- to 24-year age group and that the rate of increase in suicides, although not the absolute number of deaths, is highest for the group aged 10 to 15.

In referring to the figures on suicides and accidents, participants noted that there is a disturbing shift in use of drugs from experimentation to habituation among large numbers of adolescents, and that the problems have accelerated markedly in the last few years. Conferees agreed that such data should be considered in discussions of responses to stress.

Discussion of facets of this phenomenon—that most of the accidents are by automobile, that many of those are due to alcohol abuse, and that social class is apparently not a significant factor—preceded Rolf's observations that the suicide rate may depend on the willingness of people to report single-car deaths and other kinds of incidents like finding adolescent males who have hanged themselves.

"Before, it was hidden from social view, but I think it is important to look at what the current generation of adults does with children and how they interpret the stress for themselves. This Conference should look at whether professionals who deal with adolescents in stress, be they be educators or clinicians or whatever, understand about normal developmental processes. Are they aware that adolescents who are being oriented to the future are more likely to get depressed, especially because they don't see things getting better?"

Rolf continued by suggesting that the older generation's view of the younger one might be an area for intervention. The grandiose schemes of adolescence or the new egocentrism that usually accompanies advanced concrete operations should not necessarily be labeled as deviant "but a necessary hurdle that should not be treated with a neuroleptic." As he observed, "You drug them down in order to reduce anxiety over cognitive aspects, you make them feel physically ill which makes them more depressed and worried about themselves."

Susman commented that a great deal of research has concentrated on such questions as whether problems increase during adolescence and whether there are mean differences in problems, sex differences, and cognitive variables, so that researchers have not established developmental norms. She wondered what sorts of questions would be asked by researchers if they began with the assumption that stress is normal at all points of the life cycle or that increase in stress during adolescence is part of the normal growing process.

Moss's observation that difficulties in adolescence may be largely an adult myth evoked Rosenberg's statement that he does not view it as a myth, but that things do get better during later adolescence. Rosenberg's own research has shown definite increases during early adolescence in some kinds of disturbances which seem to culminate when the youngsters are 13 or 14. He has observed that, during those early adolescent years, the self-concept becomes more unstable; the child is less sure of where he or she is; self-consciousness increases as does an uncomfortable awareness of self as an object of the observation of others; egocentrism changes in character; self-esteem declines a little; and depersonalization, a feeling of unreality and not knowing who or what one is, sometimes occurs. Rosenberg added that his data indicate that these disturbances may affect girls more than they do boys.

Moss returned to an earlier point, saying that to assume that disruption is necessarily aberrant in the adolescent may shape the kind of research that is done. He added that the comments about drug abuse provided a good example of "objective and subjective" approaches.

"How do we know," Moss asked, "that drug-taking, accidents, and alcoholism have anything to do with stress? Alcohol use is rising as the norm across the population, accidents are going up as they certainly will if you have cars and alcohol. Suicide, I agree, reflects stress, but drug-taking is also normative and, to some extent, has to do with adjustment to the environment. So what we call 'social problems' are problems for us, but we don't know that they necessarily stem from stressful experiences within the individual. As I said, the figures themselves are not sufficient."

Does asking adolescents what worries them reveal why they commit suicide? Are their concerns different from those that adults perceive? Ogbu asked these questions to emphasize his view that only someone who wins their confidence, "not a sibling, not a teacher, but perhaps somebody else who gets to know the person well," can discover motivations for adolescents' actions and reactions.

Once again the discussion turned to the basic interpretation of stress. Langner, saying that, to him, "discussion of whether stress is endogenous or exogenous is a total waste of time," felt that such interpretations depend on the psychology and politics of the investigator and on the discussants' own feelings about locus of control. In his opinion, there should be more data and more attention to instruments and what they represent. To some extent, Langner reinforced earlier comments that research questions and approaches should not be based solely on investigators' assumptions about the problems being studied.

"You see people taking sides as to whether this is outside or a subjective thing," said Langner. "I think part of our problem with adolescence is that we tend to get deeply involved on one side or another, and at this meeting we have skirted around such issues as social control of adolescence or competition."

In response to Garmezy's question about what his data suggest about problems in adolescence, Langner said that, so far, he has not broken the various typologies down into age groups. He wants to observe age as a separate function, having only recently started doing analyses within age groups. His findings suggest so far that anxiety is not a robust phenomenon whereas antisocial behavior is strong.

As a general observation relevant to the group's discussion, Langner said, "So much of the variance in behavior is accounted for by external things that you wonder how much individual variation is left to describe what is or isn't stressful." He suggested that a study be designed to show individual variance and another to indicate things that are "generally discrepant." Perhaps in this way a life-events checklist, or description of processes, might be evolved.

When asked for an example, Langner said that "going through something like divorce" would be illustrative. "The marker of the event is divorce, but there was something before and something after. Everything in the literature that I have reviewed shows that what goes on postdivorce is critical to the outcome, so as a marker, divorce does not count for as much in school failure or depression. I'm sorry not to be able to give breakdowns, but there's so much consistency across these groups that, even though we are focusing on early adolescence, each age period speaks for the next."

Concerning an earlier question of what adolescents worry about, Hill commented that that line of research has not led far. That conclusion not withstanding, he and some colleagues have done something similar with results that are interesting and possibly relevant to the issues the group had just discussed.

The project consists of a series of substudies all directed toward the question of how families manage the transition of their first-born from childhood to adolescence. Seventh-grade boys and girls and their parents were given essentially the same checklist and were asked to check any of the items on the list they had thought or worried over during the preceding 3 weeks. Twenty percent of the issues dealt with body coordination, height, weight, strength, appearance, and grooming. Another 20 percent had to do with schoolwork, homework, relationship with peers, competition, bullying, and other standard issues that junior high school children confront.

The analysis has not been completed, but it has revealed fascinating results so far. The young people are concerned about their bodies; as Hill remarked, "That's not terribly surprising, because it's the most dramatic set of changes in their bodies since infancy and it's the first set of changes that they're able to process. It's grist for their mill."

The parents, on the other hand, are concerned about things like schoolwork. Hill observed, "You really would not believe that the parents and children lived in the same household.

"I'd like to study this longitudinally, but I'd like to use what we have already as a departure point. Although the methodology leaves much to be desired, it fits with everything we know about discussions with adolescents and their parents about sex. You know, only 15 percent of parents have any kind of discussion with their young people about contraception, or masturbation, or nocturnal emission. The taboo about the body seems to be alive and well in America, and I think this is a source of considerable stress to young people. The fact that we don't seem to be able to do anything effectively about it beyond courses in plumbing makes the problem even more difficult."

Major Factors Acting on the Early Adolescent

The Family

Michael Goldstein, Ph.D.

For some years, Dr. Michael Goldstein has been conducting longitudinal studies on childhood to adolescence in the University of California at Los Angeles (UCLA) Family Project. His focus has been on the nature of family interrelationships in adolescence and how these may predict subsequent early adult psychopathology. Goldstein says that the perspective could be classified as family systems theory from a cross-sectional point of view.

In Goldstein's view the family's involvement should be that of modulator in the adolescent's response to normative stresses of the period. The adolescent's four major developmental tasks are gaining peer acceptance, working well in school, gaining heterosexual acceptance, and achieving some degree of separation from the family. In mild to moderate stress, the family can serve protective functions by helping their adolescents master these particular tasks.

Most of his research, Goldstein reported, has been with middle-class families, largely intact, with parents who have raised their children as a couple. He questioned whether these findings can be extrapolated to families living under severe social stress, in inner-city ghettoes, for instance, where social disorganization is so great that there is a serious question whether a family can protect or intercede for its children. "The family literally cannot protect its members when there is rampant murder on the streets, social exploitation in the school, or extreme chaos in the neighborhood," said Goldstein. "In all probability, the emergence of strong gangs or other social organizations serves that protective function more satisfactorily than can families, despite the negative consequences."

Families with "certain degrees of potency," the ability to physically control and psychologically modulate, can soften the impact of difficulties that arise in the external world. "There are often periods in which parents are very concerned about the behavior of their teenagers, who may be underachievers, failing to conform to familial values in school achievement. There are concerns about the quality of their friends or lack of friends, or about lack of interest or excessive interest in heterosexual relationships. Perhaps there is concern about values that the child seems to be developing that appear different from those of the family.

"Many of these judgments would be based on value orientations that are diverse in our society; for instance, a youngster from an atheistic home who becomes involved with a cult would be violating familial values, while an individual whose parents are 'into' cults would not. The kinds of things that are seen as deviations, then, have strong value orientation."

Goldstein referred to an earlier discussion which suggested that often a source of disturbance in a family is the difference in cognitive level of parents and children. That is, when parents insist on a future time orientation and judgmentally predict grim results from present events, teenagers find the connections difficult and tension arises.

Based on his experience with hundreds of families, Goldstein thinks that the "derailments" that occur in the teenage years are only partially correlated with events taking place in the family. Instead, they can represent disturbances in mastering developmental tasks that cannot be accounted for by either preexisting or concurrent quality of family relationships. This situation imposes stress not only on the teenager but on the parents, who must cope with seeing failure, incompetence, anxiety, and possibly psychopathology in the adolescent child.

"My feeling," said Goldstein, "is that the family's capacity to deal with the stress of derailment of the adolescent child depends on the quality of preexisting relationships. The derailment may or may not be a function of preexisting family conditions but the response to derailment is highly correlated with them."

Assessment of the qualities of family relationships is important in mental health practice and research, since latent strengths and weaknesses can be hidden by the escalating cycle of hostility and alienation that may occur following derailment of an adolescent. This is the kind of research question with which Goldstein and his colleagues have been dealing, trying to assess the qualities of family relationships once there is a disturbed teenager in the family. As Goldstein said, "If we equate 'disturbed teenager' with someone who is having difficulty mastering stress, then I think we are dealing with the topic of this Conference."

In families with disturbed teenagers, according to Goldstein, the problem is to find variables that may be clues to latent strengths or difficulties that can affect the longitudinal course of development of the disturbed teenagers, their siblings, and their parents. One method for such assessment is to observe families whose children have successfully gone through the period of risk and difficulty into young adulthood to find out how those families are different. Another method, that chosen by the UCLA Family Project, is to go "the hypothesis route," selecting and examining a few variables to see whether or not they have predictive value.

The Project began in 1965 with 65 intact families, each with a disturbed teenager, according to self- or family judgment. All who came to the clinic were ultimately assessed as having severe difficulty in school, with friends, or society in general. In many cases, the problems were multiple, not limited to one setting, and all pointed toward trouble. None of the teenagers was psychotic, to judge by early assessments, and none showed any major signs of psychopathology, depressive disorders, or schizophrenia even in prodromal signs.

The youths to be studied were deemed to be at a higher than normal risk for schizophrenia and other forms of adolescent and adult psychopathology, especially anorexia. Families of those headed for schizophrenia were judged to be different from those headed for some other psychopathology or for normal development. Substantial differences were found, also, between the families with anorexics and those with preschizophrenic or preantisocial family members.

The 65 families have been followed up once every 5 years since adolescence. Currently, the Project is conducting an almost 15-year followup. Most of these people are around 30, "when lives start having a certain stability or patterning that is not so apparent at 21. We are starting to see the people who are making it and those who are not," said the speaker.

Goldstein gave an example of one young man who he thinks is not "making it." Thirty-one years old, with an IQ of 156, the young man has never completed high school or any course of education since grammar school and has never held a job for more than 6 months. He is currently driving a cab in Los Angeles, the first job he has had for 8 months. He has some friends and had one friendship with a woman but has never lived with a woman or had an intimate relationship. There are suggestions that he is bisexual, and he has had many casual homosexual relationships. Goldstein concluded, "Maybe 'not making it' is too strong, but you get the feeling, as the parents described it recently, 'the boy isn't right.'"

The 15-year followup has not been completed, but the researchers have already found three deaths among the 15 under-30s contacted so far. Two died of "speed" injections that caused brain hemorrhage; one might be called subintentional suicide—Quaaludes, alcohol, and stepping suddenly in front of a truck while walking with friends on a country road.

Goldstein continued, "From the cases we've seen, particularly the males, the idea that disturbed teenagers 'grow out of it' is a very romantic idea. We find that few, if any, have grown out of their adolescent problems without extensive intervention. The problems tend to deepen and become more serious." Those who followed up on the cases have seen major changes in persons who were afforded extensive mental health resources. Mental health personnel have worked with both families and teenagers for 2 or 3 years, "carrying the family, reorganizing them. In these cases, there is evidence of positive outcome, but by and large the picture is sad."

The Project began with a 6-week series of contacts with families seeking help. First came an intake screening interview. Families found inappropriate because of too imminent a crisis, potential suicide, or marked delinquency and antisocial behavior were screened out so that they could seek more immediate intervention. Since both team members and families found the assessments to have therapeutic value, the "ethical contract" to the families retained by the Project was not violated by delaying entry into a supportive, therapeutic environment. A few families withdrew.

The second session involved psychological testing to obtain estimates of the parents' and children's intellectual functioning. Communication deviance was tested with verbal subsets and a Thematic Apperception Test (TAT). The next phase involved obtaining a sample of interaction data from parents and teenagers. Every involved member of the family—mother, father, teenager, sometimes siblings—was interviewed, so that the focus adolescent would feel neither powerless nor stigmatized.

The standardized interview concentrated on the developmental areas of achievement, sociability, responsibility, toleration of frustration, communication with parents, sex, and dating. Both parents and offspring were asked about the adolescent's ability to handle these areas. Special intergenerational difficulties with any of these were followed through, with parent or child asked to imagine a concrete example of the specific problems and to role play what he or she would say to the opposing person in the conflict.

Interviewers worked to get "a rather genuine statement" of opinion or of the individual's desired outcome. A record of this simulated interaction was played back later to the person to whom it was directed and, in turn, that person answered as if face-to-face. The next week, actual, observed interactions between parents and children were stimulated by playing these simulated action tapes. The researchers found that only the actual problems, not universal problems, had sufficient emotional impact to generate genuine interactions within a laboratory setting.

This interaction device provided samples of behavior in dyadic discussions between the child and each parent and, next, triadic encounters with the child and both parents. Roles and impact of siblings on the families could be estimated by sometimes including them in the interactions.

By the end of the 6-week period, the investigators felt well acquainted with the families whose members, by this time, had overcome some of their shyness about revealing themselves psychologically. At this time, the Project either began therapeutic work with the families or referred them to the clinic for treatment of their problems.

The guiding philosophy of the researchers was, "Do you want to see a family at its best or do you want to see a family under stress?" Since they decided the most interesting information about latent strengths and weaknesses would be obtained from families under stress, the procedure was to make any existing conflicts explicit. When families dealt with real-life stressful problems, those with latent strengths could be separated from those with a long history of conflict.

After amassing the data, Goldstein and his colleagues began "working on the idea that families in which there is either schizophrenia, borderline schizophrenia, or what is now called 'schizophrenia spectrum' would probably have certain longstanding attributes that separate them from families not having schizophrenic offspring. We are testing some variables that the literature suggests are significant for schizophrenia to see whether they were observed 5 to 15 years before onset of schizophrenia.

"If you want to make an etiologic statement about stress disorders, you should be able to show that these family relationships can precede the onset of the disorders. Otherwise you get involved with the old issue of reactivity. Etiological data would not come from other than longitudinal studies that started early in life and included nonpathological family units. We see this study as the first step in establishing the role of the family in the onset of young adult psychopathology."

Because the term "communication deviance" has many connotations, Goldstein said he wanted to share with his listeners how this was measured and what concrete behaviors would cause a parent or parents or an offspring to receive a high or low score. Project members had discovered that parental communication deviance predicted schizophrenia in offspring quite well but that comparable measures on the offspring did not.

The Communication Disorder Index, especially six of its factors, was considered particularly significant by the researchers. The first factor, termed "contorted and peculiar language," involved such behavior as making negative or fragmentary statements or using odd words. Goldstein gave an example: Card one of the TAT, a boy with a violin, elicited such responses as, "Well, one thing I can tell you is that's not a book he's reading," or "Well, if that's a violin, he's been asked to practice." As Goldstein concluded, "There's a sense of not being able to establish a shared reality through language."

A second factor found particularly in parents whose offspring subsequently manifested schizophrenia spectrum disorders was misperception. For instance, of the same TAT picture, "There is a boy looking down at his deep-sea diving equipment and thinking that he would like to go diving," or "That's a book that a boy is reading and he has just fallen asleep." These responses showed a tendency to ignore selectively or to recode perceptual elements in the cards. Other misperceptions included sex-role reversals, e.g., seeing as a female figure one that 99 percent of the population sees as male. Or the card of a woman with her arm up was seen by one parent as a man weeping, with no justification of why the man would wear a dress.

Yet another factor was difficulty with task instruction. After the classic TAT directions, "Tell me a story with a beginning and an end for each card you are given," a person showing communication disorder would ask for directions as each new card was presented. Of this, Goldstein commented, "You feel that you never quite achieve a shared focus of what the task is about. Unintelligible phrases or overt instructions during the story may break the continuity; the individual may start another story totally out of context with the original one, overtly disrupting the assigned task."

People with high communication deviance may also overly personalize problems, according to Goldstein. They worry about the people in the story, saying things like, "I really hope it works out," or they cannot think of an ending. Other deviances were uncertainty and inability to commit oneself to an opinion about the picture on the TAT card and personal associations such as, "Oh, that's my son when he was 5 years old."

Some individuals, it was found, tried to use language impressively with malapropisms or inappropriate meanings, as if they were trying to show intellectuality but did not have the capacity to separate meanings of symbols. Some of those tested had closure problems, an inability to give any sense of meaning in telling the stories or to integrate the elements in a given picture.

Offspring with parents rated high, intermediate, or low in communication deviance were diagnosed 5 years after the original assessment, using standard psychiatric Research Diagnostic Criteria (RDC). Results showed four levels: normal, mild character neuroses, and both "soft" and "hard" ends of the schizophrenia spectrum. The "soft" included borderline schizoid personality and some drug abuse with diagnosis of antisocial personality "because that seemed to fit in any descriptions of the borderline adolescent"; the "hard" end ranged through probable, borderline, and definite schizophrenia.

Goldstein illustrated graphically that when parents are rated low as a unit in communication deviance, rarely if ever do their children have a severe psychopathological outcome in the schizophrenia spectrum. Of 19 cases in that category, only 2 showed up 5 years later, and those only in the marginal end of the spectrum. On the other hand, all cases who had subsequent schizophrenia-spectrum disorders came from family units in which the parents had been estimated as high in communication disorder. Communication deviance, important though it is, was found to be insufficient as a predictor, however. Many false negatives appeared: A substantial number of parents who were rated high in communication deviance have, so far at least, no child diagnosed as schizophrenic.

Research literature on the course of schizophrenia produced another variable, however, that interacted strongly with communication deviance to predict negative outcome: "expressed emotion." According to the literature, 90 percent of schizophrenic offspring who return to homes that show high expressed emotion break down, even though they are on maintenance medication; only 15 percent of those returned to homes of low expressed emotion will break down within 2 years after their initial episode.

"High expressed emotion" in this context means that parents engage in personal criticism when they talk about their offspring. They criticize fundamental qualities rather than aspects of behavior they dislike. Another component of high expressed emotion is overinvolvement—doing too much for the offspring, intruding in their lives both behaviorally and psychologically. Yet another component is hostility, anger, and resentment toward the offspring.

These components were originally garnered from attitudes relating to already deviant offspring. The Project members tried to translate them into interactional terms suitable for their study (Doane et al. 1981). Parental criticisms included telling the child what he was thinking or feeling, usually in a critical tone, as well as "guilt induction," a tendency to comment about the offspring's behavior in such a way that he or she would feel guilty, unworthy, or devalued in the eyes of the family. The researchers characterized these parental actions according to the family's "affective style index."

The researchers found that the part of the family in which communication deviance and negative affective style had been combined showed more pathology than when either factor was considered alone. Among those findings were:

- Benign affective style and low or intermediate communication deviance did not produce a single incident of schizophrenia spectrum disorder 5 years later.
- Intermediate or poor affective style and low communication deviance resulted in a predominantly benign outcome, with the two schizophrenia-spectrum cases in the "soft" end.
- High communication deviance in a situation in which the evaluative attitude was basically positive did not produce schizophrenia.
- The combination of high communication deviance and poor affective style did not produce a single good outcome, with all forms of pathology noted 5 years later falling within the schizophrenia spectrum.

Goldstein said of the findings, "This is tuning in on just two aspects of family life, but the data suggest that some aspects of communication within the family and the affective evaluative attitude are important. They indicate that, in some way, the most pathological family environment for an already disturbed teenager is one in which trait attributions of their fundamental worthlessness, and insensitive parental wisdom that knows more than the child about his own needs and abilities, are coupled with contradictions and retractions of meanings.

"In the transcripts taken of these families, it's striking how these trait attributions are made, then disqualified, then blurred. One is left with a tremendous sense of confusion over the meaning of the messages about the fundamental worth or value within the family. Some of you may recognize residues of the old double-bind notions, resuscitated but in a somewhat different form with rather clear specificity about some of the parameters in this particular family system."

To learn more about parental dominance or the relative salience of the mother or the father within these families, the researchers scored transcripts of "who talks to whom," finding striking correlations between the communication deviance and family structure. Fathers in families high in communication deviance rarely scored as salient in the communication; when they were more included, they were ineffective in achieving any focus in the discussion. Families with low or intermediate communication deviance, however, tended to be largely father-salient, with fathers receiving and initiating many of the intrafamily "messages."

In summing up, Goldstein said this research indicated a tendency for affective components to go together and for communications to index structural but not affective deviations within the family. For efficient prediction of outcome, therefore, both factors should be considered. He added, "They correlate .0; therefore, there appear to be quite separate dimensions in families that predict the capacity of the adolescents to work their way out of a derailment that occurs in response to the formative stresses of adolescence."

Goldstein continued, "In conclusion, there seem to be, at least in this small, middle-class, intact-family sample, some identifiable parameters that have predictive value. I think we will soon be able to separate out those families that appear to be reactive to the derailment of the adolescent from those that are chronically disturbed and contribute to continued stress of an already disturbed teenager."

DISCUSSION

Questions ranged over characteristics of the disturbed family groups and technicalities of the research methods and findings. To a query about the incidence of child abuse in the Project sample, Goldstein replied that they had found some, for example, a child who was probably brain damaged from having been thrown against the wall when she was 2 years old. Goldstein characterized this family as "one of the most disturbed, despite many years of therapy before they got to us." Both parents showed high communication deviance and negative affective style in the researchers' assessment.

Another questioner asked how communication deviance affected siblings of the focus children. In some instances, Goldstein said, only that one offspring appeared disturbed; the predominant outcome, however, was disturbance in siblings, as well, although not always in the same form. For example, one family in the study had two schizophrenic and two alcoholic offspring and one depressed teenager. Another family, judged to have both high communication deviance and negative affective style, had one child who was a borderline schizophrenic throughout most of the teen years; the other, the nonindex case, suffered an acute schizophrenic break after entering college.

"It's rare to see a well-functioning person in a home with highly deviant communication," said Goldstein, "but you don't always see the same forms of psychopathology. Occasionally, one child will make it—one of the apparent invulnerables."

Before interpreting the language of his research at the request of a listener, Goldstein admitted that there is still work to be done in establishing cross-situational correlates, because "projective tests are not family interaction." He then described a situation this way: "One person makes a statement and no one answers it. It's simply not responded to, or it's responded to off the wall. A particular phrase is picked up that has apparent continuity in the ears of the listener, but the person who is attempting to track what's going on has great difficulty following the conversation and is left wondering 'how did we get here?'

"Side issues are continually brought in; someone will say, 'Ten years ago you did this.' They want to talk about things in the distant past and it's not always communicative. Often it seems that unfair arguing accelerates the emotionality of the conflict within the family, and no one has executive ability."

Goldstein reported that a student in the Project, Debbie Lieber Rotberg, had found that although most of the people would drift off from an assigned conversation, the families with low communication deviance would be recalled by a family member. In those families with high communication deviance, however, everybody seemed to get "drawn along," and no one appeared to have the executive function to say, "Let's get back to the task."

Moss observed that the high communication deviance of the parents, as described by Goldstein, is often thought of as schizophrenic. He wondered whether any attempt had been made to evaluate the parents to see whether or not schizophrenic parents are more likely to have schizophrenic offspring.

Goldstein said that, although only one parent in the sample would receive a diagnosis of schizophrenia, he believed many would receive "borderline" diagnoses. "I don't know what the diagnoses would be according to the new DSM-III criteria, but they're strange people who don't fit any psychiatric nosology. They are very vulnerable, very disturbed people who rarely have sought psychiatric treatment—but they don't hear voices."

To Moss's question whether this communication deviance might not be indexed in some broader psychopathology within the parent, Goldstein replied that the data might be looked at as an index of factors that lead to chaotic family relationships. He added, "If they are indeed genetic markers, they're also markers of psychosocial transactions that have been in these families a long time and may require a more complex model of the true stresses within family relationships. I couldn't rule out the behavioral side of it."

Goldstein observed, also, that a comparison of the sample families with alcoholic families would show both to be "very, very disturbed, but since the two groups do not show the same attributes, it's not a simple linear scale of severity."

Other questions concerned whether the sample revealed which combination of parental disturbance in communication deviance or affective style made the most difference in the family and whether results on offspring were the same if only one parent were high on both categories. Goldstein said that the notion that both parents have to manifest these to a high degree has not yet been validated. He added, though, that there seems to be a pattern in which one parent shows the disturbance and the other does not have "corrective style." He then said, "If some of these misperceptions and major closure problems are present in one parent and not compensated for by the other, that is at least as pathological as when two parents show any of the attributes."

Concerning the response of a child to the excessive judgmental quality of the parents and the ensuing interaction, Goldstein said that the subject is one the researchers are particularly interested in, "because the children's longer history of dysfunction, higher frustration levels, or many years of failure may also be contributing factors. It's possible," Goldstein noted, "that some attributes—trouble with the law, lack of friends—produce more parental anger than others. The parents' responses may depend on the kinds of problems or vulnerabilities the children are perceived as having." These researchers are currently studying the possibility, too, that behavior of children who later manifest schizophrenia is "more bizarre" in adolescence than that of other children.*

Social Relations: Peers and Families

John Hill, Ph.D.

Reviewer after reviewer on adolescent social relations has concluded that universal storm and stress during that period is a myth, said Dr. John Hill. He added some corollary myths: that rebelliousness is the "typical and happy pathway to autonomy"; that peer-parent conflict is inevitable; and that peers replace parents as the major social influence during adolescence.

These delineations are not adequate to the present time, according to the speaker, who praised some of the ideas presented at the Conference as "attempts to replace these formulations with some notion of adaptation, some less sickly view than has characterized work on adolescent social relations up to this time."

The notion of adaptation seems to focus on three primary changes of adolescence, particularly early adolescence, Hill

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*Long-term attempts by the UCLA Family Project to "intervene clinically with these families and use these dimensions to disentangle what was necessary to be helpful," as Goldstein put it, have been described in a paper distributed at the Conference, "The Assessment and Treatment of Disturbed Adolescents and Their Families: A Clinical Research Perspective," by Kathryn L. West, Ph.D., a member of the Project staff. It is included in the new book, *Major Psychopathology and the Family* (in press).

said. Biological changes are "the most dramatic somatic changes in the human organism since infancy." Psychological changes are primarily in the cognitive realm and involve "the gradual transformation of information-processing skills through consolidation of what Piaget called 'concrete-operational' skill and the initiation of what he labeled 'formal-operational' skills." Hill characterized social changes as the entry for many into new, larger, and less personal educational institutions.

Hill believes it is significant that most recent work in this area is trying more than formerly to describe and understand adaptation to the changes of adolescence instead of assuming automatically that each change for each child brings a stressful outcome. He added that new studies will be most beneficial if family, peer, and school influences are examined not only separately but conjointly.

To say that experiencing stress while adapting to each primary change is not universal "is not to say that there aren't millions of young people and families who do have difficulty in dealing with these problems," Hill reminded his listeners. Literature on parent/peer conflict and studies of childrearing practices, on the quality of life, and on the epidemiology of disorder agree rather closely that from 15 to 25 percent of young people and their families report or show in other ways that adolescence is problematic. The studies do not tell, though, what proportion of that 15 to 25 percent are casualties of adolescence as opposed to casualties of childhood.

"We need to understand better what is distinctive and unique about failures of adaptation in the second decade of life," Hill said. "As Dr. Goldstein pointed out, by the time their children reach adolescence, a number of families are carrying a heavy baggage of problems with them."

Hill cited the Isle of Wight study as relevant. In that work, Michael Rutter and his colleagues (Rutter, Tizard, and Whitmore 1970) studied young people who had reported disorders during adolescence, comparing those whose disorders had preexisted with those whose onset apparently began at adolescence. They found that family pathology was much more strongly associated with disorders that began earlier and persisted into adolescence than with those that began in adolescence.

To gain some understanding of the causes of disorder against a normative developmental background, researchers should use the primary changes—biological, psychological, and social—as independent variables in further work, Hill said. Most earlier studies have been based on self-report and have been mostly large-sample rather than longitudinal; in addition, most have focused on high school students rather than on youngsters still in junior high, the period when the primary changes begin to show up. Hill briefly outlined a few studies that contain characteristics he deems more useful, such as a combination of self-report and observation of family interaction or of observation solely, and comparison of normal, intact families with pathological ones.

One of the studies compared runaway and delinquent young people with carefully matched controls by observing the families in a structured interaction task. Unpublished cross-sectional data from this work suggest that, in atypical families, the interaction of 16-year-olds with their families looks like the typically unequal family interaction of most preadolescents. In the typical families, however, 14- to 16-year-olds had begun to give nurturance as well as to receive it.

Another small study done by Hill and Larry Steinberg at Cornell investigated family interaction patterns of 40 7th-grade males from middle-class families with onset of the pubertal cycle as the principal independent variable. Among the "relatively consistent results" was one finding of greater assertiveness in the families by young men who had moved into the pubertal cycle. Further, mothers of boys in the middle of the cycle, when the growth rate was most rapid, were interrupting more successfully and explaining themselves less. When a child was virtually through the pubertal cycle, the mother's tendency to explain and interrupt decreased to the level it had been before the child attained puberty. Steinberg's continuation of the study showed that fathers tended to be more assertive, interrupting more and explaining themselves less, when mother and son were "at the heat of the battle."

Hill said he believes these data should be interpreted as "perturbations" while families adjust to intraindividual change in one of their members. He added, "We are trying to replicate this study with a sample of 200 boys and 200 girls, half from working-class and half from middle-class families, and we are including some other variables in addition to those I've mentioned. We are impressed so far by the consistency in the results and the regularity of the associations with pubertal change."

The speaker remarked that contemporary research has paid little attention to the argument that positive peer relations during adolescence may well be indispensable to normal social development. Piaget argued that moral autonomy cannot be learned in the family because the family power structure is lopsided and that mature formal judgments depend on experience with equals "in a give-and-take in which one person, by virtue of size or control of percent of the resources, can make you behave in an appropriate way." One must learn morality through cooperation with peers.

Another argument has been that the peer group offers a relatively safe context for exploring new concepts of self. Hill said that the literature on adolescent drug abuse, early delinquency, and other rebelliousness intimates that peers provide support for one another and reinforcement for experimentation. "Rather than rebelliousness," he said, "it's a kind of imitative flattery."

Hill continued, "Despite all these arguments and some of the supporting data, I think it's of interest that the majority of practitioners, many influential scientists, and certainly the media continue to review peer effects in almost exclusively negative or garden-path terms. Almost no authority speaking out on behalf of youth has much good to say about peer influence.

"In probably two dozen studies, freedom from undue influence of either parents or peers was rarely shown. All were conceptualized as though the child inevitably must choose the peer path as opposed to the parental path. Rarely was it considered that both sources might be appropriate in making one's decision. Nor was the possibility of concordant or additive models for looking simultaneously at peer and parent influence taken into account."

Hill said that researchers studying adolescent-family relations need to learn more about how parents change rearing strategies in view of their children's changes and movement into social roles. In other words, "When we talk about the psychology of adolescence, we need to talk about the psychology of change during that period."

Recent scientific literature on adolescence has suggested to Hill, among other things, that:

- Peers come to influence vocational and educational decisions during adolescence; but according to some studies, even through high school in American society, there is greater parent-child than child-peer concordance.
- Familial conflict tends to occur over things like appearance, dress, consumption patterns, and influence of peers.
- Consistency in moderate levels of family support and control shows up in friendly and spontaneous relationships with peers and provides a secure base for exploration in social relationships.
- Childrearing techniques of authoritative parents (whom Baumrind (1980) defines as those who view parental rights and obligations as complementary to those of the child) strongly influence the composition of their adolescents' peer friendship groups, cliques, and neighborhood friends.
- The most slavishly peer-conforming children clearly appear to have come from the most extremely authoritarian or permissive families.

Hill summed up some of these findings this way: "Difficulty in social relationships with peers and slavish peer conformity or problems with competition occur when children are driven out of the family through some form of permissive neglect or extreme authoritarianism."

According to Hill, friendship choices are based not only on familial influence on the adolescent, but on propinquity and similarity as well; despite geographical mobility, adolescent friends are, for the most part, neighborhood associates and, "given the 'ghettoization' of America at all levels of social class, are likely to be from families who share similar values. I think we should put more emphasis on that in understanding adolescence than we do on parent versus peer conflict."

An interesting issue relating to support systems in adolescence and to stress management, in Hill's view, is the extent to which secondary schools scramble these neighborhood associations. Hill illustrated by observing that parents of junior high girls are concerned about physically and sexually matured 9thgrade boys; in fact, at the community level the current middle-school movement is essentially an argument against 9th grade, the peak period of the young male's growth cycle. He said, "When you talk to school people about this issue, they are really telling you that they believe that various forms of school organization generate informal patterns of peer association that persist outside school."

As an aside, Hill remarked that many arguments about integration and busing are based on similar kinds of underlying arguments. Teaching and learning situations in integrated schools may not necessarily differ but the schools "by the way they're structured and who's in them will affect patterns of informal association among peers."

Social isolation is another factor of concern to adolescents that is highly relevant to the issue of school association. It contributes critically to subsequent pathology, presumably because of the absence of social support in the face of stress. Many people have told Hill that "they travelled through secondary school with a group of seven or eight buddies who were their support system. To them the talk about 'mix' is really nonsense, whether the mix is by social class, race, intelligence, or another form of school organization. The crucial support comes from those buddies with whom you started through this maze and finish. If that is the case, it suggests the need for a more community-based intervention, of building social supports for young people in quite another locus than school."

Concerning research needs of the future, Hill concluded, "I think research on schools and their impact on the generation of peer associations is a very important topic for the 1980s, not only because of its relation to stress, but because of its relation to so many of the social issues and problems that involve our American society."

DISCUSSION

At Lerner's request, Hill described current data analyses of his work including some preliminary observations of nonverbal behavior as a function of pubertal status and interaction between fathers and daughters. The researchers gathered, from looking at "videotape after videotape," that prepubertal daughters and fathers "maintain a full open posture toward one another while they are talking or working across a table, doing a task that requires materials or apparatus. When girls move into the pubertal cycle, the fully open posture does not continue. It may be fully open above the table, but below it, legs are crossed, and oriented away from the parent of the opposite sex."

These researchers are convinced of the validity of their observation and believe, also, that the behavior is not a conscious act. Now, they are awaiting reliability checks by "somebody who doesn't know the hypothesis." So far, there has been no similar study of mothers and their sons or daughters.

Responding to questions about the middle-school/junior high school controversy, Hill explained that 50 or 60 years ago, 7th and 8th graders were taken out of elementary school to put together young people who were "more similar biologically and intellectually." Now, because of the extension of puberty downward, parental opposition to having 9th-grade boys and 7th-grade girls in the same school, and the practical matter of declining school enrollment, various kinds of middle schools are being formed.

It is not clear to Hill that patterns of cross-age interaction have much to do with a school's structural arrangements; they may have much more to do with older siblings and introductions to friends, or previously formed patterns of community-based associations. He added, "Underlying many social policy decisions and much of our practice related to youth is the matter of keeping kids from growing up too fast by preventing associations with older peers. The ultimate solution, of course, is to put each grade level in its own building with a dome."

Moss asked whether there is real evidence of 7th graders associating with 9th graders or whether this is "entirely the fantasy and anxiety of adults." In reply, Hill told of a study he and a colleague did with a local, rapidly growing school system that had recently built a new secondary building for 9th and 10th graders. The school system optimistically believed that 10th graders would not be "corrupted" by 12th graders nor 7th and 8th graders by those from 9th grade.

The psychologists began their evaluation of the impact of this shift on the youngsters' social behavior by observing the last year of the 3-3 arrangement and the first year that the 2-2 went into effect. They found that when 9th graders were removed, experimentation by 7th and 8th graders with tobacco, alcohol, marijuana, and other drugs decreased, as did drug abuse. Further, "Students felt less alienated and reported fewer instances of bullying and vandalism. They liked school more—all the things that the school people were ecstatic about when we reported it, because they were right.

"But they weren't right about sex," Hill added. "In the absence of 9th grade boys, more 8th graders became active sexually. In addition, what happened to 9th graders was the mirror image of what happened in junior high. That is, in the presence of 10th graders, 9th graders were doing all these things more than they did when they were with 7th and 8th graders.

"We are now looking at the part of our data that deals with patterns of peer association, to determine whether the base is principally in school or in the neighborhood, where kids see other people who are important in their lives. These can be used as a mediating variable between school structure and the outcomes I have described. And that's where I think the more interesting part of the research is."

The Schools

James Kelly, Ph.D.

There are approximately 32,000 public and private high schools in the United States, with a variety of social and physical environments, administrative styles, and educational philosophies; each reflects the diversity of the communities served by the schools. Little empirical research has been done on school environments or the relationship between school environment and student adaptation. In fact, behavioral scientists have studied only about 500 schools, almost entirely on the east or west coasts.

Dr. James Kelly's interest in the varied beliefs about secondary schools in this country has contributed to his observation that some people have selected the cognitive and intellectual development and achievements of the students as the primary function of the schools; others have stressed social, emotional, and occupational development. Concerning both views, Kelly said, "Most people indicate that, by default if not by design, secondary schools sort students into social strata. An inevitable sifting goes on, by the nature of the social organization of the high school.

"We know the schools' function of giving out certificates," he continued. "The ceremony of high school graduation takes on an extra function beyond commemorating intellectual attainment, celebrating the social, emotional functions of young adulthood. Less often mentioned is the fact that schools have a custodial function. They are often, in fact, a citadel for trapped youth."

Kelly pointed out that these activities are germane because "decisionmaking about school policy becomes an area for accountability and leadership." He expects more debate, discomfort, and turmoil about educational policy in the future which will probably impinge on school financing.

Summing up the matter of secondary schools as an organization, Kelly said, "We inevitably have to deal with the fact that the secondary school is a product of the local community and its values. That is probably one of the greatest reasons why, in fact, secondary schools are a psychological depot; people are coming and going for different purposes and in different directions. It's the job of the educational faculty, then, to generate coherence."

Kelly continued by reviewing a few examples of changes taking place in this country's schools at the present, recommending as background reading "School is a Social Situation," a review of the literature by Paul Gump (1980) which covers a number of topics currently causing anxiety about the role of behavioral science in the schools.

One change Kelly discussed was the recent movement toward architectural openness, the removal of physical barriers within the school building, to give "more autonomy for learning." Research has indicated that in physically open schools there is more mobility, but less achievement. A side effect is greater social integration of students. Studies of the open environment indicate that an integrated teaching philosophy coupled with organizational purpose has a positive effect on achievement within such an environment; more generally, however, research indicates less progress in curriculum development.

Kelly reported, also, on an innovation in curriculum reform known as "teams, games, and tournaments," stimulated by The Johns Hopkins School of Organizational Change Research (DeVries and Slavin 1978). In this secondary-school experiment, peer clique structures were designed to facilitate goal-directed learning in a shared environment. Competitiveness was buttressed with other clique structures in the school's academic activities. The experiment showed increased academic achievement in the test group as compared to controls. In addition, the tournament produced more pupil-pupil interaction in cross-cliques, and the participants showed more self-esteem.

Another study Kelly considered exciting was Elliot Aronson's "jigsaw puzzle" (Aronson et al. 1978). In this work, 5th-grade children were told to do a biographical study, with each student receiving different facts. The complete biography could not be completed until each student obtained parts of the life story from every other student. As Kelly put it, "They can't get the assignment done until they've learned to see themselves as an interdependent part of a total intellectual enterprise."

In Kelly's view, research that uses both self-report and direct observation in classroom environments will increase, as will attempts to learn more about the relationship between quality instruction and the learning preferences of young people.

Some studies, such as the "Social Climate Measures" of Rudolph Moos (1979; Trickett and Moos 1973), have tried to develop measures of the psychological environment, including properties of classrooms and high school environments. Kelly referred to "the system-maintenance factor" of the classroom, the "personal-development factor" which explores a variety of ways in which competition is reduced, and the "relationship factor" which "explores accessibility of friendship among students and faculty in a classroom" as important contributions of Moos' work.

As to his own research, Kelly said he had been interested in developing "what I considered an ecological paradigm, making predictions between types of social structures of environments and the cost on coping behavior." The basic idea was that an environment with a high-turnover characteristic for both students and faculty would facilitate exploratory behavior in students and that a static, low-exchange environment would not.

Success with an earlier, smaller version of this work in Columbus, Ohio, led to the expanded, in-depth, more complex study at the University of Michigan (Edwards and Kelly 1980; Kelly 1979; Kelly et al. 1971; Hersey 1977). In the course of this later work, Kelly and his colleagues learned not only about students but also about faculty and parents and the school environment. Kelly found, in other words, that unexpected factors mediated to change the theory on which he had based the work, "and that's the story I want to talk about," he added as he began to describe that study.

In 1968, boys leaving 8th grade for two different high schools were assessed and selected on the basis of a variable called "exploratory behavior" and followed throughout their high school careers. The exploratory variable was chosen on the assumption that it would determine whether such a characteristic would produce a different adaptive history in different high school environments, given the fact that the two high schools had different turnover rates.

Demographically, the high schools were as equivalent as Kelly could find in southeastern Michigan, with mean education of the parents quite similar. The first school community, in Wayne, was a somewhat affluent working-class community; the other, in South Redford, was a bit more urban and affluent, with greater homogeneity in social class. The schools did differ, however, in turnover rate of both students and faculty. At the beginning of the study, the turnover rate was 21 percent in Wayne and 7 percent in South Redford; the rate decreased in the high-turnover school during the 6 years of the study.

To learn about the social competency of the youths, each 8th grader was asked what he did well and enjoyed doing well. Only 6 percent of boys in one school and 3 percent in the other reported anything related to interpersonal competences. Activities in the recreational area were identified by 70 percent as "things they could do well," a powerful determinant of the connection between development of competence and recreational skill.

The assessment scale developed for the study was based upon self-descriptions that would provide a personality measure revealing each boy's quality of exploration. For example, low exploration was indicated by "yes" to such statements as "I don't like to go to different neighborhoods," or "Teachers with different ideas make school confusing," or "I don't like doing something until I'm good at it." A boy who answered "yes" to such statements as "I suggest new ways of doing things in class" was rated high in exploration. Over time, the researchers found that students at the high-turnover school saw more opportunities for self-development, saw their principal more positively, and participated in more extracurricular activities.

Kelly remarked to his listeners, however, "I think what we were measuring was not exploration in the generic sense, but a form of social engagement. Over the entire study, we found that students who, in the 8th grade, had high preferences for exploration or social engagement developed higher self-esteem, showed more initiative both from self-report data and observational procedures, reported less depression, had fewer social problems, and had higher performance in such roles as worker, student, and son. They got more involved in classes and extracurricular activities and felt more a part of the school routine."

The study showed a quality observed by other Conference participants: Mothers of the high-explorer boys were up-to-date with precise details of their sons' lives. The mother of a low-explorer boy would say, "Well, I think he's doing pretty good in school. He seems to be doing better this year than last, although he has had some problems." At both schools, however, mothers of high-explorer boys would not say only that their sons were doing better—they would know the boys' exact grades, the quality of their relationships with their teachers, and even their sports scores.

"There was an informal and encyclopedic investment in their sons," said Kelly. "If I were going to do this study again, I would put more emphasis on the connection between mothers and sons, particularly in this interaction. The effect of fathers did not seem to be that strong for the exploratory variable," he added.

In commenting about the style of his research, Kelly said that he had been fascinated by the mutual stereotypes "we in psychology have of high schools and high school students and they have of us." After the researchers' persistence had gotten the study going, prejudices toward the Michigan doctoral students were eventually overcome and faculty members at the high schools were stimulated to do research on their own schools. A critical ingredient was having a coordinator in each school be responsible for research and aid with administrative management. Assembly reports on the study were given for the faculty at least twice a year and faculty members were assisted in completing dissertations in educational administration. "In all," said Kelly, "we negotiated modest resources between us and the school staff which enabled both of us to look at the research in a more comprehensive, committed, and in-depth way."

In conclusion, Kelly gave what he called "throwaway suggestions" for further research on adolescents and their schools:

- *The forms of social encounter.* As an example, Kelly related the story of the pom-poms: A major topic of discussion for several weeks at one of the schools was the choice of color for the pom-poms that cheerleaders would use for athletic events. Kelly and colleagues were vastly interested not only in the way cheerleaders, faculty, and school administrators worked to resolve the crisis but in "who lost and who gained, whose status was increased, whose status was put aside, and who considered the whole thing silly." Kelly continued, "I would recommend that other people doing school research look at such events and the impact of those events on the social status and influence of students."
- *The microanalysis of critical settings.* Kelly observed that because of the architecture of one school, ledges became critical as student cliques were defined according to which hallway and which ledge was their gathering place. "We not only have to study ledges and 'ledging,' but we have to study the relationship between clique structure and such behaviors as 'ledging' over time. I think such settings become an important index of how social norms are developed and how social power is translated for the student population."
- *Diversity of settings in the classroom.* In general, "The worst thing students reported about the schools was the classroom. They said if you didn't have classrooms, school would be a great place to be. There were, however, faculty who designed variety and diversity within the classroom and other faculty who did not. The classrooms with diversity of function or multieducational methods in use enhanced satis-

faction." Kelly would like to see this topic studied as a potential for greater student adaptation and achievement.

- *Variety of settings outside the classroom*. A characteristic of the low-turnover school was the lack of informal settings where students could interact with each other or with faculty. The high-turnover school had a greater equality in social environment and greater student-faculty interaction outside the classroom. Schools seem to need places where informal social interaction can take place. If these are not available, students go outside the school, reducing the chances for direct educational benefits of informal settings within the school building.
- *Short-term vs. long-term effects of adaptation*. Kelly pointed out that one of the schools in his study seemed pleasant and informal whereas the other seemed to be anonymous. He added, "One of the nagging thoughts I have is that there were hidden costs attached to the high-turnover school, which had a bubbling, effervescent quality and stimulated positive qualities of psychological help-giving. My question is: What happens to those students when they go to other communities, when they leave such a 'happy,' controlled environment of limited scope?

"We have the sense that, when students who had a positive experience in that school went to a larger university outside the Detroit area, they had adaptation problems because they had come from a controlling and benevolent environment. By contrast, what seemed to be an anomic quality in the second school, at the time, may have forced some students to engage the anomic social structure even though the school was offering little in return. The question is, did these differences serve the students positively or negatively at a future time?"

- *The relationship between exploration preferences and support in the family*. Kelly believes that a unique social interaction among parents and the family unit sustains the young person's preference for engaging in the social structure of the school and for maintaining these preferences throughout high school with positive academic and social consequences.
- *The faculty as a caring resource*. The qualities, independent of background or academic achievement, that are necessary for a faculty member to become a mentor who will take on

the informal commitment to "engage" children and to be a resource as an external, positive force in their lives should be studied.

DISCUSSION

Answers to participants' questions afforded Kelly the opportunity to talk more about the two schools and their faculties, student achievement, the social adaptability of the high-explorer and low-explorer boys, and his "exploration" paradigm. He said that he had predicted that the high-turnover school would maintain the positive social engagement of its students but that this resulted largely from mediating variables that he had not predicted. Kelly is persuaded that "the short-term adaptive potential is only short-term" as far as adaptation to other surrounds is concerned.

The chief "mediating variable" was the faculty of the two schools. At the high-turnover school, the principal was very successful in political activity in the community which, as Kelly said, "gave up its values to the school, in effect saying, 'I trust you, do a good job.'" This principal had almost total control of the building; he was "a benevolent autocrat running the school with good purposes. He would tell the students to 'smile.' At the same time, the principal had some trouble accepting the fact that there *were* bright, useful, competent students who were not outgoing or did not conform to his philosophy, and he had difficulty with deviant behavior such as long hair or unusual dress styles. The school had a great deal of student-faculty interaction, with faculty competing with students in basketball games and with tugs-of-war in a nearby mud bowl as a 'rite of spring.'"

The high-turnover school had more faculty who were born and raised in the local community. Faculty turnover reflected social-class differences between those members who wanted to stay and work with working-class students and those seeking to move up to a more affluent school system. The faculty in the other school, in an increasingly conservative community, had low morale, an anxious, defensive school board, and were internally divided.

About 70 percent of the students in the high-turnover school went on to some higher education, usually a business school or a community college. The number of high-exploratory boys in the high-turnover school did not increase, but the characteristic was maintained. Kelly added, "Interesting to me is that the exploratory preferences dropped at the low-turnover school. If one considers social engagement as a positive characteristic that we wish to nurture, then the quality of the low-turnover environment, over time, may have affected the decline in exploration preferences. This was a significant difference, for the boys with low-exploration preference at the high-turnover school didn't really gain a lot, but they didn't leave school."

In regard to qualities of social engagement, the boys considered high in this characteristic seemed to have a more comfortable, easy relationship with girls. Those considered low in social engagement "were looking at girls almost as a distant foreign culture they didn't understand."

Kelly referred to an earlier statement when he admitted, "What I was trying to say, in my oversimplified view about turnover, is that I was wrong originally. Rather, we found that it's the quality of the principal-faculty relationships that is probably the unique characteristic of a school's quality, in spite of the fact that I originally selected the two schools in terms of turnover rate. Turnover rate had some interesting, positive effects for the research, but I don't think that this variable has much to do with affecting exploratory behavior."

Environmental Stresses and Their Outcomes

Thomas Langner, Ph.D.

Findings from the Family Research Project, a study of 1,034 children from randomly selected families in an area of Manhattan and 1,000 children from a cross-section of Aid for Families of Dependent Children (AFDC) families in the same area, well qualified Dr. Thomas Langner for his opening comment, "I'll be talking about stress." He warned his listeners that he would not be talking about coping—his aim was, rather, to present profiles and predictions of potential etiological stresses, especially the stress contributions of many aspects of childrearing.

The general objective of the study was to relate environmental stress to behavioral disorder in children and adolescents over time. This meant placing emphasis on the family and the broad social environment, with attention to physical illness, accidents, and handicaps. It involved collection of family histories of emotional problems and treatment; measures of parents' educational, marital, and police history; and demographic variables—sex, race, and socioeconomic status (SES).

Another aim was to classify "in some replicable fashion" environments to which children are exposed. Yet another goal was to classify reliably types of predominantly untreated children as an aid to predicting outcomes or future behaviors in child diagnostic categories.

"A common estimate of child and adolescent 'caseness' is that 15 percent are diagnosable," said Langner. "How can we classify the behavior of the other 85 percent? Our subsidiary goals were to identify the individual symptoms and symptom patterns at different ages that would predict future impairment and psychopathology, since we saw early identification and classification as a first step toward primary prevention." Changes in children and families over time were measured, with change in the child related to family and social change.

Every mother in both samples was given a structured interview of 2 to 2 1/2 hours about one of her children, chosen randomly, who was between the ages of 6 and 18 at the first interview. The two waves of interviews took place in 1967 and 1972, with a spread of about a year between each. At the second series of interviews, 71 percent of the original cross-section respondents and 66 percent of the original welfare respondents were contacted.

A psychiatric interview was held with 25 percent of the families, with psychiatrists rating children on separate scales from their parents. A psychiatric impairment rating diagnosis on paper was based on a computer summary of the mother's report of the child's behavior. Reliability between raters for these ratings was .80. The total of 654 items about child behavior in the mothers' questionnaire was reduced to about 200 and further factored into a set of composite scores.

Familial factors were determined from 91 questionnaire items encompassing eight parental factors that described marital relationship, character and personality of mother and father, and the mother's physical and emotional health. Five factors based on 81 questions dealing with the way parents related to children and their childrearing practices were analyzed, as well. The investigators obtained school records for 88 percent of the children and families, and court, police, or social agency records for 90 percent or better for both youths and adults.

The first child-behavior profile was based on cluster analysis using 18 factor dimensions—sex curiosity, self-destructiveness, mentation problems, conflict with parents, dependence, regressive anxiety, weak group membership, compulsivity, training difficulties, undemandingness, repetitive motor behavior, fighting, delusions-hallucinations, competitiveness, delinquency, conflict with siblings, late development, and isolation.

The speaker explained some of these by indicating the questions used to arrive at the various factors. For example, a tendency toward self-destruction included behaviors such as frequent falling down, injuries, suicidal ruminations, and excessive crying. The "noncompulsive scale," he pointed out, "has its opposite end in mild antisocial behavior, such as stealing things from mother's purse. It's not street behavior, but it is antisocial, although not prognostic of gang behavior or arrests."

Of this material, Langner said, "Those are the descriptions of child behavior in the community. In the cross-section sample, about two-thirds of the children were classified in healthier categories. Of these, 16 percent were classified as sociable, 12 percent as competitive-independent, and 34 percent as dependent. Most of these children have good outcomes."

Of the approximately one-third who were classified in impaired groups, 16 percent were moderate backward isolates; 4 percent, severe backward isolates; 12 percent, aggressive; 0.7 percent, organically impaired; 2.8 percent, self- and other destructive; and 1.5 percent, delusional. Of the total impaired group, 14 to 29 percent had been arrested at least once, and 35 to 54 percent had poor school or police outcomes. "In terms of overall symptom levels and overall functioning—peers, parents, and so on—these groups range between 15 and 57 percent severely impaired or worse," said Langner.

Of special significance were the multidimensional environmental predictors of disorder ranked by their power. They were: 1) being Spanish-speaking; 2) having punitive parents; 3) having cold parents; 4) being black; 5) having an excitable rejecting mother; 6) having an emotionally ill mother; 7) being one of a large number of children; 8) paying high rent; 9) having a traditional restrictive mother; 10) moving or having a large number of addresses; and 11) not living with natural parents, or loss of father.

While the predictors of child disturbance or disorder were not surprising, their rank order might not have been anticipated. For example, loss of father, which, as Langner said, is given prominence in the literature, was only eleventh in predictive power. He explained that maternal lability, demonstrated by such questionnaire responses as "mother screams at child," "is very changeable in handling," or "regards herself as an excitable person in handling the child," seemed to be associated to some extent with "depressive development in children."

Other predictive characteristics such as coldness or punitiveness ("hardly ever hugs or kisses the child," or "spanks with a strap, stick, or other object") seemed more associated with antisocial outcomes. Emotional illness of the mother predicted, according to Langner, "depressive symptoms in children, such as crying, injuries, and concern about death." Moving a great deal, or uprooting, related to fighting and delinquency; large family size was related to reduced competition and had the greatest influence on impairment of children's scholastic ability. Loss of father was associated only with delinquency—reflecting findings of other studies—but was not associated with anxiety or depression, as in some studies.

As to school analysis, Langner hopes, in the future, to track features such as sibling rank order and births during mothers' late thirties or early forties to learn what aspects other than family size impinge on scholastic ability. He said, "Remember, we're talking about unique variance in this multiple regression analysis. These results are independent of social class. Even high-income families which are large would have children functioning below par in school, according to this interpretation of the data."

Ethnicity and SES were associated with numerous difficulties, for instance, more isolation, less group membership, more problems with toilet training and with impaired mentation (which includes concentration, memory, speech, and compulsivity). Being Spanish-speaking was especially associated with a forecast 5 years later of dependence and nonmembership in groups. Blacks exhibited problems with mentation and demandingness, like asking parents to do or give things, with a 5-year forecast of dependence and repetitive motor behavior, such as spinning and head-banging. Among whites, the forecast was for greater conflict with parents.

Langner commented that most predictors forecast behaviors with which they were originally linked. Delayed effects showed up, however, for punishment and traditional restrictive mothers. He added that "when there were punitive, physically violent parents, the fact was not visible immediately but the variance 5 years later was great. I think this has something to do with the fact that antisocial behavior is something you mature into rather than out of."

The 5-year followup was significant in that changes in parents during the period showed changes in the children, as well. If parents became warmer or less rejecting, their children showed less conflict with them, less anxiety and fighting, and less isolation and delinquency. Changes in parental coldness and excitability were reflected in changes in aggressive behavior both in and outside the home, but changes in parental punitiveness were related to changes in intrafamilial aggression.

With advancing age, the children showed an increase in delinquency and undemandingness but a decrease in weak group membership, isolation, formal group membership, and dependency. Other behaviors that decreased with advancing age were anxiety, training problems, sexual curiosity, and fighting.

Family types were created to determine their predictive value for future pathology. Six types were standardized from eight factors having to do with the parents and their marriage and five factors concerning how they dealt with their children. The other factors considered were demographic, and included ethnic background; welfare status; child living with both, one or no natural parents; child always in mother's care; number of children in the household; the monthly rent; and the number of addresses in New York City.

The researchers hypothesized that the relative risk for one or more future pathologies should increase as demographic and/or family stresses increased. For the families interviewed in both 1967 and 1972, the researchers determined percentage of children who evidenced one or more of four adverse outcomes—held over, dropped out, or expelled from school (according to school records and mothers' reports), or charged offense (according to police records). Some of the family types and their risk for at least one of the adverse outcomes were: White Affluent Cohesive, 8.9 percent; Spanish Low-Status Traditional Cohesive, 33.3 percent; Low-Middle Status Ethnic Mixed Discordant (the category with a high proportion of black families), 42.9 percent; and Spanish Welfare Isolated, 58.3 percent.

When the researchers noted that three basic patterns—Stable, Worse, or Better—had developed within each family type over the 5-year period, they simplified the family groups. They wanted to determine whether risk of future pathology, as measured by the outcome variables previously used, varied as a function of consistency in environment. "Stable" was combined with "Worse" or "Better," depending on the nature of the original family type and "ceiling or floor" statistical effects.

According to Langner's report, "City Children: The Family Research Project," (1981) findings for five of the six family types were according to expectation when the researchers examined the variable of at least one adverse outcome. "A favorable environment which changed for the worse had a higher percentage of children who exhibited one adverse outcome than if the environment was stable or changed for the better. Likewise, an unfavorable environment which changed for the better had a lower percentage of children at risk than if constancy or worsening was noted over time."

Because of some inconsistencies in that finding, the family groups were simplified to: 1) White Affluent, Stable or Improving; 2) White Affluent, Stable or Worsening; 3) All four Disadvantaged types (Single Non-Biological Parent, Spanish Cohesive, Spanish Welfare Isolated, and Mixed Ethnic Discordant), Stable or Improving; and 4) All four Disadvantaged types, Stable or Worsening.

Results of this portion of the study clearly divided along ethnic lines. Group 1, White Improving, showed a 7 percent rate of adverse outcome, exactly half that of Group 2, White Worsening. Groups 3 and 4, Disadvantaged Improving and Disadvantaged Worsening, had rates about four times greater than the white rates: 36 percent and 41 percent respectively.

For affluent white families, spontaneous improvement in the environment (social or familial) leads to a halving of the prospect for poor outcome, according to this study. Apparently, however, this brighter prospect is limited to whites; for Groups 3 and 4, composed largely of minority families, the rates of poor outcome for their children were the same whether their social and family environments had improved or not. The difference in outcome rate between Improving and Worsening conditions was only four percentage points. Statistically, this suggests that greater change can be accomplished by family therapy with white families than with others.

Langner asked, "Are these minority children simply so damaged by time that they can't improve even though their families are improving? My interpretation is that they're not damaged, but that there's just so much negative reinforcement in the slum environment that a poor outcome isn't surprising."

An examination of behavior change of the children showed that those who became more aggressive, with increased fighting or conflict with their parents, were, generally, younger children with relatively punitive parents of higher SES; those who showed general improvement were usually older children of Spanish-speaking parents who were relatively nonpunitive; the ones categorized as "stable independent" were older children of higher SES parents, regardless of ethnicity, who had a relatively happy marriage; and those considered to be generally worsening were younger, with lower SES parents in an unhappy marriage and on AFDC Welfare. The 5-year followup showed, on analysis, that those deemed generally worsening had significantly worse school and police outcomes, while the stable independent type had significantly better community outcomes.

By a path analysis, the researchers determined the relationship between social class, parenting practices, the marital relationship, and their effects on child behavior. That path led from social class through the quality of the parents' marriage to parental practices and, finally, to child behavior. The path coefficient leading from social class directly to parental practices was approximately zero. Langner said, "People of various social classes don't automatically hand down their good or bad parenting practices to their children. The qualities of the marriage seem to modify those factors. A bad marriage tends to encourage the development of poor parenting."

Langner said that the study had not focused on coping by adolescents. He hopes new studies will use coping measures that separate poor coping from psychopathology, since, generally, "The correlation of assumed stresses of various kinds is so high with some outcomes and behaviors that there may be relatively little room for measuring contributions of positive coping."

DISCUSSION

Most questions by participants dealt with Langner's survey techniques and findings about racial and sex differences. Werner wondered whether the low number of sex differences across time and predictors correlated differently in relation to SES, marital stress, and peer and child stress.

According to Langner, the sex variation was so low that it was not calculated by ethnic group or social class, once determination had been made that differences were small. He added that women were treated three to five times more often for depression than were men, but that adolescent girls did not show more depression than their male counterparts. The chief sex difference Langner noticed was in the self-destructive group; within this, the more serious cases were primarily younger Jewish males. Langner continued, "They had two college-educated parents and good grades in school. Why didn't girls show this at some point, at least during adolescence?"

Goldstein's question whether the prediction equation forecast more antisocial than traditional behavior led to a discussion of bias. Langner replied that antisocial behavior had a heavy influence because teachers and parents rate that as "the worst" but, he observed, "this is a biased estimate."

"I think it is biased," remarked Hamburg, "but it is not your bias; it's the bias of society because we handle differentially identical behaviors among whites and nonwhites. The arrest rate and rate of institutionalization in a detention home is staggeringly high for blacks for the same kind of behavior for which whites would not be arrested. If whites were institutionalized, they'd be in another institution. If you take a measure of the kind that has societal bias built in, you're going to get just the kind of findings that you did."

Langner replied that through self-reports, police reports, and the black, white, and Hispanic mothers' reports, arrest rates were "much greater for blacks than for whites." According to this study, Langner reported, 50 percent of black and Hispanic males and 22 percent of the white males have been arrested.

Asked by Garmezy to comment on this from his viewpoint in the NIMH Center for Studies of Crime and Delinquency, Dr. James Breiling replied that the issue of racism in arrest and procedures was true, but that data from several Law Enforcement Assistance Administration (LEAA)-funded studies done within the last 5 years of intake procedures and court practices showed little difference in disposition and adjudication if the study controlled for prior offenses.

Breiling added, "One argument for a racial difference in handling was in the self-report studies. Recently, though, Hirschi, Hindelang, and Weis (1980) did a national study on self-reporting and found that those who commit the most offenses (who happen, unfortunately, to be black males in disproportionate number) also underreport the most, by a factor of about three to one. Also, in studies of police arrests there is a small race factor, but very small, again largely controlled by the number of offenses."

A participant asked, "If you control for number of offenses, aren't you controlling precisely for developmental history, which is a bias?" Breiling answered, "It's tragic that blacks of 11 and 12 are committing offenses at the rates of white males of 16 and 17. The tragedy, of course, is that victims are probably other blacks, which is why homicides and death rates are so high among black males."

Garmezy wondered "if the racial factor still isn't operative" when arrest rates for 11- and 12-year-old black children equal those of 16- and 17-year-old white children. Breiling replied that the rate of offending increases with age to a peak around 15 and 16 and varies with the type of offense. "If you were to stick with status offenses, the discretionary and minor things," he continued, "you could say there's a lot of room for discrimination. But there's not a lot of differential reporting in hard, serious offenses—rapes, murders, and break-ins—and that's where the differences really show up. That's what I'm referring to."

General Discussion

Morris Rosenberg, Ph.D., Leader

After commending the work of earlier speakers, Rosenberg mentioned other possible approaches to research on schools. He returned to the intermittent but continuing theme of the effect of parental attention on adolescent development and referred to Kelly's comment that mothers of high-explorer boys were more aware of their sons' activities, triumphs, and defeats. Rosenberg noted that the importance of this awareness was revealed in his recent research with McCullough (1981).

"There is a variable that I call 'mattering,'" he said, "which is the adolescent's feeling that he or she makes a difference in the lives of specific other people—parents, in this case. Mattering is manifested in feeling that another person is interested in us and dependent on us, that we are another person's ego extension, and that the other person feels that what happens to us is relevant to him- or herself."

After examining this issue in four large-scale studies of adolescents, Rosenberg found that feeling that one matters is correlated with a number of indicators of mental health: self-esteem, depressive affect, psychophysiological indicators of anxiety, and "negative affective states." Those low in mattering were more likely to be high in various types of delinquency, as well. The studies showed, too, Rosenberg said, that "the correlation still exists whether the other person thinks well or poorly of the individual in question. Even if the child feels that the parent has negative feelings about him, as long as he feels that he matters to the parents, that is, is an object of their interest or concern, self-esteem is higher, and depression, anxiety, and other negative affective states are lower."

Rosenberg had found a similar result in earlier research (1965) in which he asked adolescents about their parents' reactions to good or bad report cards. In the case of bad report cards, the pupils reported being punished, being deprived of allowance or the car, or having to stay in their rooms. Others said they had been encouraged or helped. Yet others said that their parents had paid no attention to poor report cards.

"Of course," said Rosenberg, "those who said that their parents helped them had the highest self-esteem, but the second-highest self-esteem was among those who said they were punished—higher than those who said their parents had paid no attention. And I attribute this to mattering. Even if the parents' attitude is negative, the adolescent feels he makes a difference to them.

"I think the fact that the mothers of the high-explorer boys knew what they were doing, what they were interested in, who their friends were, what they were up to, may be one reason for their good adjustment, even though it may have been viewed at the time as obtrusive or nagging."

Turning to Hill's discussion of social isolation in the high school and community, Rosenberg stressed the importance of overcoming isolation among adolescents. Among adults, research has shown that an important predictor of life satisfaction is membership and participation in both formal and informal organizations. Those concerned with adolescent development should give thought to structuring school activities in order to maximize participation. For example, youngsters tied to rigid school bus schedules are effectively barred from participation in many activities.

Lastly, Rosenberg stated that the Conference, though identified by the theme of coping and resilience, had not given nearly enough attention to the creative coping abilities of children. "We can ask the question, how do children survive their parents and their schools? How do most manage to grow up so well despite the formidable difficulties they face? They cope in the most imaginative and ingenious ways. The more research I've done on this, the more impressed I've been. Dealing with just one major problem of adolescence—the protection and enhancement of self-esteem—I have been able to identify a number of selectivity mechanisms that are used to protect self-esteem against the threats that constantly assail it: selective interaction; selective imputation; selective valuation and credibility; selectivity of values; selective introjection; selective causal attribution; terminological selectivity; selective social comparison processes; and selective comparison levels" (Rosenberg 1979). With regard to other tasks of adolescence, he suggested, there are many other coping mechanisms employed by adolescents. "I would say that when NIMH becomes involved in the area, it should focus heavily on the range of coping mechanisms employed by youngsters to deal with the stresses of adolescence."

Roundtable Discussion: Current Research and Conceptualizations on Stress Responsivity

To open the roundtable discussion, Garmezy invited the group to "talk freely about some of the central themes that you see, either on the basis of your own work or on reflections of the current scene as you saw or heard it, and discuss what you are doing and what needs to be done."

Albert Bandura, Ph.D.

Discussions began with Dr. Albert Bandura's comments on his work in self-efficacy as "a framework within which one might begin to conceptualize and study stress and coping." The idea of self-efficacy, according to Bandura and his group, begins with the assumption that competence in coping with environmental demands is not simply a matter of knowing what to do. It involves "a flexible orchestration of cognitive, social, and behavioral skills in dealing with situations that contain elements of ambiguity, unpredictability, and stress."

From this, a number of questions about operative competence arise. How do people judge their capabilities for dealing with situations? How does perceived coping effectiveness relate to the degree of stress experienced and the quality of the individual's functioning?

Bandura assumes that people use four different sources of information to judge their capabilities for coping. Most important of these is the "performance mode," the one based on previous experience in handling similar situations; this is the most authentic information concerning what one can or cannot do. The assumption is, of course, that success builds efficacy whereas experience with failure undermines it. Bandura would like to see more research done on these judgmental factors, to identify how people evaluate ability and nonability factors in judging their capabilities on the basis of success or failure.

The second source of information, the "vicarious," is concerned with the way a person's sense of efficacy is built up or undermined by observing the success or failure of others. Of this, Bandura said, "To clarify the role of vicarious influence in the development of self-efficacy requires research on how processes of social comparison operate and interact with efficacy information from other modalities. Although mastery experiences are powerful, there are conditions under which vicarious experience can have a profound effect. For example, studies have been conducted in which people with certain patterns of success or failure observe others fail at the task. This vicarious experience tends to lower their perceived efficacy; later, when they encounter difficulties they do not exert as much effort. They give up readily and begin to experience failure. Such vicariously induced inefficacy undermines performance and provides behavioral validation for inefficacy."

The third mode of judging one's ability to handle a situation is built on the influence of "social persuasion." To explain, Bandura said, "Consider conditions under which, for instance, overprotective parents present situations as much more dangerous than they are. They begin to undermine the child's sense of ability to cope with the situations; the more venturesome parent might use the same situations as opportunities to instill and reinforce a child's sense of coping efficacy. It is easier to undermine a sense of efficacy through persuasion than to boost it because exaggerated judgments about what a child can do are readily disconfirmed by results of the child's actions. People convinced of their inefficacy are unlikely to try challenging activities so they fail to develop their competencies and thus validate their inefficacy."

The fourth informational mode depends on people's perception of their physiology and on inferences they make about their vulnerability; in other words, tolerance for stress is based on conjecture about accompanying physical arousal. The researchers assume that this interpretation of physiological arousal indicates inefficacy, vulnerability, and a low threshold for stress, and that different inferences about physiology might mean more effective functioning.

Therapeutic counterparts have been developed. For the performance mode, for instance, Bandura's group uses treatment based on participant modeling. The assumption in this case is that "mastery experiences" create change; models show effective ways of coping with various situations and, as Bandura said, "You use a variety of response induction aids that enable people to succeed in spite of themselves."

The therapeutic counterpart for the vicarious mode of influence is based on modeling principles, the most potent being one that creates predictability out of feared unpredictability and builds controllability out of inefficacy. In brief, after people tell what result they fear from a given situation, those events are repeatedly modeled for them, to demonstrate that the result they fear is not necessarily what will happen. Thus, a sense of predictability is built as to the most likely outcome from a given course of action. Next, effective ways of coping are modeled so that fearful individuals can gain a sense of controllability. This, in turn, solves the problem of self-induced stress as well as enhancing the level of competent functioning.

In the case of physical arousal to stress and its accompanying sense of inefficacy, the therapy of choice is biofeedback or desensitization. Of this, Bandura said, "Within this model, I'm assuming that people's perceptions of their efficacy affect how they are likely to behave and their behavioral patterns affect the degree of arousal and stress they experience in coping with taxing situations."

Bandura added that perceived self-efficacy influences choice of activities and settings. People with a sense of efficacy are likely to undertake activities and enter situations that they judge they can handle; those with a sense of inefficacy will be prone to avoid things that they feel exceed their coping abilities.

"Any factor that affects choice can profoundly affect the course of personal development, because those who feel inefficacious will not take advantage of enriching environments that foster development of skills and competencies," he said. "In addition, the sense of efficacy affects the amount of effort people are willing to expend on an enterprise and their persistence in the face of setbacks. The inefficacious tend to dwell on their deficiencies and see threats as more formidable than they are. Through this anxious self-preoccupation, they undermine their performance and create the very effects they fear. The efficacious approach difficult situations more as challenges and simply mobilize the effort necessary to succeed."

Bandura and his colleagues have used a number of experiments to test the idea that different modes of treatment instill and reinforce a sense of coping efficacy. They have been working mainly with people suffering from severe phobic conditions and have devised efficacy scales for each domain of functioning—whether these people fear shopping, eating in restaurants, using elevators or escalators, climbing heights, or driving automobiles—under progressively stressful conditions.

In developing these scales, the researchers defined tasks in terms of level of difficulty or stress value and required those being treated to designate which activities they thought they could do, and with what degree of certainty. These measures furnished a pattern of the person's level, strength, and general self-efficacy. After the phobic individuals have undergone various forms of treatment, their sense of efficacy is reassessed. Behavioral tests provide data for determining congruence between judgment of efficacy and action, so that researchers gain detailed knowledge on how self-referent thought is related to coping behavior and stress.

The researchers believe that the different modes of treatment alter behavior by creating people's perceptions of their coping efficacy. Treatments based on mastery experiences are the most powerful; those based on vicarious or persuasive modes are moderately effective. Degree of behavior change closely parallels the induced level of efficacy change and fairly high congruence exists between judgment of self-efficacy and ensuing action. As a result, it is possible to predict differences between treatment and anticipated change. Bandura added, "One can even predict the specific tasks clients will cope with and handle successfully and those they will fail."

Currently, research is focusing on developing treatments based on mastery experiences for overcoming multiple phobias. Bandura and his associates are seeking the best strategy for inducing a sense of efficacy over a number of fears at once. One question is whether to work in several domains simultaneously or to pick the easiest first. Another question is how best to transfer a feeling of control from one fear to another in the shortest period of time.

Particularly relevant to any discussion of stress, according to Bandura, is their research developed recently to determine how much an individual's perceptions of personal efficacy predict the level of anticipatory arousal in the face of a potentially stressful situation and to determine, also, the amount of stress experienced in handling that situation. To test this, researchers present severely phobic persons whose perceived strength of efficacy they already know with a series of tasks and then measure their level of fear and physiological arousal.

Participants report the amount of stress they experience both when they are presented with a task and later when they perform it. Researchers then measure the relationship between earlier measured perceived efficacy and anticipatory and performance stress. Bandura reported the findings this way: "People experience high anticipatory and performance anxiety on tasks in which they perceive themselves to be inefficacious, but as the strength of their self-efficacy increases, their anxiety declines, and threatening tasks are performed with little or no apprehensiveness."

The next level of research will relate physiological measures of anxiety arousal in terms of perceived self-efficacy. Currently, researchers are measuring blood pressure level, heart rate, and other indicators in subjects whose efficacy strength they already know. Bandura hopes this research will shed some light on whether efficacy measures can predict how much anticipatory and performance anxiety individuals will experience when faced with tasks that present varying degrees of threat.

Another line of research Bandura described "tests the notion that perceived efficacy may be the cognitive mediator in achievement-oriented behavior." In this study, the researchers are working with second graders who are "wiped out" in arithmetic and who say they "hate" it. On the assumption that children who have experienced repeated failure need persuasive evidence that they are gaining competence, the researchers have devised self-instructional material that enables children to master necessary subskills. Some children pursue the program of self-directed learning with daily subgoals aimed at mastering a different subskill each day. Others are given more distant goals such as commitment to master subject matter within a week.

Bandura said that he and his group are working on the assumption that proximal goal-setting, itself, provides a form of self-motivation, gives markers of growing efficacy, and creates self-satisfaction. Within a short period, the children who had serious problems acquire arithmetic competence; as their sense of efficacy increases, so does their interest in the subject matter.

Bandura described programs of research aimed at testing the degree to which self-efficacy can predict the probability of relapse after treatment for problems such as smoking and for rate of recovery from a heart attack. Bandura also hopes to analyze conceptually the development and change of self-efficacy through the life span. How do social agencies, such as the family, peer groups, and schools, contribute to efficacy? How are different sources of efficacy information used at different developmental levels? What are the major challenges to efficacy at different periods in life?

"The initial efficacy experiences are centered in the family," he said. "Evidence suggests that because physical effects of actions are immediate and consistent, ability to manipulate the physical environment in the early years of life is important to the early development of cognitive competence.

"Another aspect of efficacy development is that of social comparison with siblings and peers. For instance, how do young children learn to use social comparison information realistically? The most meaningful people for social comparison are those who do slightly better, but how do children learn that that is the relative comparative other? Some experiments have suggested that preschool children can discern differences in ability before they learn to use social comparative information effectively. A fascinating area of research is how different family structures, as reflected in family size, age spacing, and sibling constellation patterns, affect the development of children's sense of efficacy."

John Ogbu, Ph.D.

"I am going to talk mainly about the sociocultural environment and its contribution to adolescent stress or to stress among adolescents of a particular population. The sociocultural environment beyond the family is implicated in adolescent stress, yet we have not discussed stress factors that arise from group membership. The importance of the wider sociocultural environment in generating adolescent stress came to my attention when I was doing an ethnographic study of school children in a low-income minority neighborhood in Stockton, Calif., during the late 1960s."

Ogbu briefly recounted that research experience. He was hired to determine why low-income children, mainly blacks and Chicanos, who made up 92 percent of the neighborhood elementary school, were not doing well; nor were adolescents from these two minorities doing well in high school. The school system, he was told, had reduced class size, added "cultural enrichment," and, "in general, done all it could to alleviate the situation, but the children still did poorly." After he broadened the research to include other ethnic groups, the school system itself, and the experiences of various groups in the local social system and corporate economy, he made a significant discovery.

"When I included Filipinos, Japanese, Chinese, and whites in my sample, I found that some minorities at the same economic level were not behaving like the blacks and Chicanos. Moreover, there were important differences in other areas of adolescent experience. Chicanos were also overrepresented. In the area of delinquency, blacks, who made up about 7 percent of the city population, constituted 45 percent of the young people held in 'juvenile hall.'

"I began to ask, why do we have different groups of minorities in similar socioeconomic circumstances attending the same schools but behaving differently? Upon closer examination, I found that the minority groups that did well in school and were not overly represented among the 'juvenile delinquents' were immigrant groups. I ended up calling blacks and Chicanos and Indians 'subordinate minorities' and the Orientals—Japanese, Chinese, and Filipinos—I called 'antiblack minorities.' Some Spanish-speaking people recently from Mexico behaved in school just like some people from Hong Kong. There was something different about minorities from outside."

Consideration of this phenomenon, at about the time that Jensen propounded his theory that blacks did not do well in school because they were intellectually inferior to whites, prompted Ogbu to expand his subsequent research to include "subordinate minorities" in other countries—West Indians in Britain, Harijans in India, Oriental Jews in Israel, Buraku outcastes in Japan, and Maoris of New Zealand.

"It did not really matter whether these minorities belonged to the same racial group as the majority (Harijans, Oriental Jews, and the Buraku outcastes) or to a different racial group (West Indians, Maoris, and black Americans); they all lagged behind in school performance and IQ test performance and were overly represented among school dropouts, juvenile delinquents, and so on. Along with blacks, Chicanos and Indians, I ended up calling them 'castelike minorities,' meaning, basically, those minorities that have been more or less incorporated into a society somewhat involuntarily and permanently because of 'push' or 'pull' factors or both. They usually regard the society in which they exist as their homeland and, unlike the immigrants, may have no other that is acceptable. The academic and social problems of the minority youth tend to vary with the status of his group as caste-like or immigrant."

Ogbu illustrated by describing the case of the Buraku outcastes, for whom the same problems exist in Japan as for blacks, Chicanos, Puerto Ricans and Indians in the United States. He added, "But those Buraku outcastes who have come to the United States are doing no worse, and sometimes better, than Japanese-Americans from the dominant Japanese group."

Another illustration came from New Zealand. "Here we find two Polynesian minority groups with similar language, culture, and family structure, namely, the indigenous Maoris conquered and colonized by the British in 1867, and Polynesian migrant workers from islands outside New Zealand. Of the two Polynesian groups, the Maoris are less successful in school and overly represented among school dropouts and juvenile delinquents."

Further analysis revealed that these castelike minorities are forced by restricted social and economic opportunities, particularly by a job ceiling—highly consistent pressures and obstacles that selectively assign minorities to jobs at a low level of status, power, dignity and income—while allowing the dominant group members to compete more easily and freely for the more desirable jobs above that ceiling on the basis of individual qualification and ability. In turn, minority members are forced to develop particular ways of coping and looking at the world which may contribute to their academic and social problems.

Ogbu went on to observe, "Our difficulty in trying to understand the problems faced by minority adolescents lies in the nature of available research literature. Psychologists and others who have attempted to explain why different groups do differently in school have generally looked only at the children's microenvironments—the family, classrooms, and laboratory; they don't deal with the impact of the wider society or the wider social structure. As a result, they have come to explain the adolescent problem mainly in terms of parent-child interaction or intrafamilial relationship."

To understand how the wider environment influences the development and behavior of different groups of children, it should be recognized that each culture makes specific demands on its members. Various tasks within each culture require their own instrumental competencies or skills which have been developed by members of the culture, both as a reaction and adaptation to social and economic circumstances and as a necessity for survival and effective functioning in that environment. Because different environments may require different competencies or coping skills, the attributes children develop for "making it" or coping in one culture may not be appropriate for coping with the demands of another setting or culture.

The speaker briefly compared achievement strategies in the United States mainstream culture and in other societies. "In American society, the rule for making it is that you'll be rewarded if you are very competitive. Middle-class Americans therefore raise their children to be competitive in school and society at large. Studies of various ethnic groups in Nigeria by anthropologists (LeVine 1967; Cohen 1965) show that there are other ways of achieving success.

"In one case people attain societal rewards through the kind of individual competition found among middle-class Americans. But in the other, the way to attain societal reward is through clientship, by being a sycophant, very compliant. In the latter group, children are taught to show compliant behaviors in their relations with their parents, teachers, leaders, and all adults. In such a society, a person is rewarded only when his superiors think he has behaved according to what pleases them.

"I agree," continued Ogbu, "that there are individual differences in ways of handling these culturally standardized child-rearing techniques. But before we put everything on parents and family, we should study what demands the wider society makes of these parents and the family. What do children in American society in general, or in a given segment of it, need to know, to have, and to be in order to function effectively within the corporate economy and/or the political system? In effect, we must start by examining the requirements society makes on its members to perform such cultural tasks as work, employment in the corporate economy, maintaining a good and stable family, and relating to people."

According to Ogbu, the prevailing assumption in child development studies is that certain socialization practices produce the right outcomes for carrying out those cultural tasks successfully. However, he thinks that the nature of the expected outcomes, and the requirements of the cultural tasks of a particular society or social group, may, in fact, determine the method used to raise children in that society or social group. He added that it is important to recognize this reverse order of events because a society like the United States, stratified by class, race, and sex, often requires different sets of rules of behavior for achievement and prescribes different cultural tasks for some of its segments.

The speaker cited the case of blacks and whites as an example. He pointed out that before the 1960s blacks faced a job ceiling and other opportunity barriers and therefore did not necessarily attain high or equal social status or obtain equal jobs even when they had the same educational credentials and ability as whites. "It often seemed," he commented, "that blacks were required to satisfy additional criteria, like being an Uncle Tom, whether they were being considered for the position of a college president, a school principal, or a classroom teacher, or to receive promotion on the job."

Clientship was not the only additional adaptive strategy or coping mechanism that blacks developed in order to make it under the job ceiling. They also developed other "survival strategies," as they are called in the ghetto. For some, survival strategies include hustling and pimping; for many, they involve "collective struggle" or civil rights activities used to increase the pool of resources (e.g., jobs) for black people. These survival strategies—clientship, collective struggle, hustling—are the cultural tasks requiring appropriate attitudes, knowledge, and behaviors or competencies among blacks.

When people grow up in a community, such as the inner city, under conditions that require these additional competencies or coping skills, they have to learn the additional mechanisms required to meet their subsistence and survival needs. Normal ways of behaving are determined by whatever the members of the community recognize as necessary for survival and subsistence; and these are things that parents and other childrearing agents teach children consciously and unconsciously.

In Ogbu's view, the components of the "ghetto-effective environment"—home, church, school, street—all play a part in raising children to develop the skills they need to function effectively in ghetto life. But the outcomes need not be the same as those of the white middle-class suburb. From the perspective of cultural ecology, subsistence and survival strategies influence not only ghetto blacks' theory of making it but also their social organization and social relations, as well as the dominant adult types found in the community and their instrumental attributes or coping skills. The end products are particular types of children and youth with the distinctive attributes found in the ghetto.

From his own observations and his interpretation of literature on the subject, Ogbu speculates on the relation of childhood, adolescent, and adult categories and related coping skills. He cited the suggestion by Silverstein and Krate (1975) that elementary school children they studied in Harlem may be grouped into the "Mainstreamer," the "Submissive," the "Ambivalent," and the "Precocious Independent." Although the categories are not mutually exclusive, the outcomes appear to be generally predictable for ghetto children in that they do not evolve into suburban white categories in later life.

In the folk categorization of inner-city blacks, during adolescence the Mainstreamer tends to become the "Square," or "Ivy-Leaguer," the "Regular" or the "Cool Cat." The Submissive child may turn into the Regular or the "Jester," while the Ambivalent one apparently can go any way—Square or Ivy Leaguer, Regular, Jester or Cool Cat. The Precocious Independent, in adolescence, becomes the "Gowster/Antagonist," and in adulthood may be expected to become the "Street Man."

Continuing Ogbu's "speculation," the adult period of others are, in folk categorization, the "Working Man" (conventional worker—the most prevalent), whose origins may be the Square, the Regular, or the Ivy-Leaguer; the "Client," who comes from Squares, Regulars, or Jesters; the "Reformer/Militant," who in adolescence is either a Square, Ivy-Leaguer or Regular; the "Entertainer-Hustler," who began as a Regular, a Jester, or a Cool Cat; and the "Hustler" and the "Pimp," both of whom originate mainly from "Cool Cats." Role-playing is one of the distinctive attributes of ghetto people, so that an individual can be expected to play or simulate the various roles according to circumstances.

"The point is that all these types of ghetto people are adaptive to its social and economic realities. It does not mean that they are happy. Some of them experience a tremendous amount of stress and some have difficulty adjusting. They merely represent various ways the people have developed to cope with the realities of ghetto life: high incidence of unemployment and underemployment in the conventional economy; poverty and dependency on the welfare system for subsistence; high incidence of subeconomic activities such as crime, gambling, alcoholism, and drugs; a sense of powerlessness; and the like.

"Some of these ghetto types effectively exploit available conventional and nonconventional resources at the expense of interpersonal relations. One of these is the hustler. One mark of hustlers is that they can't maintain close interpersonal relationships. That just doesn't go with the trick. It's a trade that uses interpersonal relationships for gain. They can't trust anybody because they don't know who the police informer may be, and they always have to keep at least one step ahead of the police and everybody else. People say that a pimp or a hustler has to be able to kill a person and walk out."

Ogbu returned to a point made earlier, that a cultural ecological perspective on development and stress directs attention to societal forces beyond the family and to the adaptive categories of people and their coping skills as the context in which to evaluate properly the childrearing behaviors of parents and other agents. It is by examining these broader societal forces and their demands on a given population that we learn *why* the existing social categories are produced.

In addition, Ogbu observed that certain aspects of stress in adolescence may not have much meaning unless viewed from the inside. He feels that comparative studies are valid but difficult when categories from "the outside" are imposed. Generalizations can be made only on the basis of adequate knowledge of the realities under which different groups live.

Summing up, Ogbu said, "I think the study of adolescence among minorities will be meaningful if we reconceptualize the problem to go beyond merely looking at intrafamilial situations to ask about other factors that impinge on the families and why families behave as they do."

Salvatore Maddi, Ph.D.

The commonalities of opinion among many of the researchers, despite differences in emphasis, interested Maddi, who said, "Some pattern of agreement is going on, with Bandura's emphasis on efficacy, Kelly's on exploration, and mine on hardiness." He added that he had also observed a general agreement on the importance of longitudinal studies and presented a number of suggestions for future research studies of adolescents. Among them were that:

- *Studies should cover a period of years.* There is a "a lot of bouncing back and forth in adolescent development," with each year's development different from the last. So a short longitudinal period may give an erroneous picture. Demonstrations of "prospectivity" are important, and the fact of a tiny lag between independent and dependent variables is not enough to demonstrate this. Useful supplements to time lag are such data treatment methods as path analysis and analysis of covariance.
- *Each period of childhood through adulthood should be articulated with the others.* Hill was quoted as suggesting that an adolescent may fail because of the problems of childhood. Maddi agreed, but added that the problems of adolescence may cause failure even though there were few problems in childhood. This indicates that the researcher should use any

available data about the childhood years, although the longitudinal study itself may begin with adolescence.

Concerning the articulation of adolescence with adulthood, Maddi said, "On the basis of what I've heard in the last couple of days, I don't think we can decide that we just study adolescence because it's there, throw in a lot of measures, put them in regression analysis, and see what comes out. We need to ask ourselves for what purposes we want to study the adolescent period. That's where conceptualizations of adulthood come in. I suggest we do our studies on as comprehensive a theory as possible of what adult life is all about, especially if our concern is with stress and stress resistance."

Maddi elaborated upon this emphasis on comprehensive theorizing with the following:

- *Stress needs to be clearly defined.* The term can be applied either to events or reactions to events. If to events, then a term like "strain" should be adopted for the reaction to stress. If to reactions, then a term like "stressor" should be adopted for events. Measurement decisions should reflect these theoretical decisions, with stressful events or stressors probably measured consensually, not phenomenologically, as the latter includes the confounding effects of strain.

- *Dependent variables should be carefully considered.* "There is a lot of disagreement on the criterion problem," said Maddi, "and if we cannot resolve this conceptually, we should agree to disagree in a meaningful empirical way by including measures of a number of dependent variables." Maddi illustrated the "criterion problem" by reminding his listeners that the group had had difficulty with the concept of "adjustment." "Someone may appear to be adjusting beautifully in a particular context, but if he is put in another one he falls apart. What is adjustment after all? Is it even desirable? I think we all mean different things by it, so probably all the meanings should be measured and compared with each other empirically."

- *Further comparison should be made of personality and social-support variables.* Although both kinds of variables appear to be important in empirical studies of stress management and each has its proponents conceptually, they are not clearly enough delineated and there is insufficient understanding of their interaction. For example, the concept of social supports appears to include many variables. Referring to statements made earlier at the Conference, Maddi said, "John Hill talks very persuasively about the buddies he grew up with, aside from the 'peer group' in a larger sense. John Ogbu talks about the culture and social structure that impinge upon us. So social support isn't simply the coherence of the family, the kind of thing we, as psychologists, are more likely to think about. It has to be defined more broadly."

- *Personality must be taken into account.* Personality characteristics, as Maddi sees them, are personal needs that influence the kinds of choices people make. In discussing the youngsters Kelly described as "deviants" from the norms established by the school principal, Maddi and Garmezy had asked themselves whether the students "would be better or worse persons for it in some broader sense." Said Maddi, "There, I think, the answer is in the kinds of values and supports and models they were getting at home. Those who were learning the rudiments of the three Cs could probably be deviant in this strange high school situation without getting hurt by it, and this might have helped them develop." In this example, Maddi suggested that the outlines for conceptualizing the interaction between social supports and personality might be discerned.

Beatrix Hamburg, M.D.

In some general reflections on the spirit and research findings of the Conference, Dr. Beatrix Hamburg observed, "Coming of age in America is increasingly lengthy and apparently increasingly complicated. In the early days of this country, adolescence was a fleeting period. At times, it was omitted entirely. When individuals could do the tasks of adults they did so, even if they were barely able. Regardless of age, their childhood was over when they could engage in full-time productive labor. Now we're talking about a period roughly 10 years long, from ages 10 to 20. This period encompasses a time of maximum biological change, a significant role change, and a great deal of adapting at all levels of biological and psychosocial response.

"Since this is such a long period, the quality of life and the experience of adolescence have value in their own right. If we want our adolescents to experience this era as happily and productively as all other eras of their lives, we need to understand their developmental needs as they evolve over the adolescent decade. Further, we need to match up their evolving needs with the influences of the significant individuals and social institutions that will have compelling effects on adolescents' lives. In addition, this lengthy transition period may represent a critical learning period a rehearsal for the behaviors and coping styles that will characterize their adult functioning. All of these reasons make adolescence one of the most crucial as well as one of the most fascinating periods of the life span."

The speaker commented that the occurrence of the Conference and the "excellence, breadth, and diversity of research reported here" were all impressive testimony to the progress that has been made both in defining questions and indicating promising directions for future research. However, she added, "Two major areas have been neglected that are extremely important in understanding youth and socialization outcomes. One is the impact of the media, which we have not talked about at all and which deserves a great deal of research. The other has only been hinted at. That is, what are the avenues of meaningful youth participation and productive roles in relation to family, community, and the larger society?"

Hamburg called attention to some adolescent behaviors—smoking, use of drugs and alcohol, inappropriate pregnancies—as being "time bombs" that will explode with severe consequences at varying points in adult life. She suggested that the adolescent period be used to help young people understand these issues and learn to renegotiate their own behaviors and actions with significant others as well as to modify values. Adolescents can be given concrete help in understanding the cognitive issues outlined by Keating and in using the learned efficacy techniques of Bandura. They can become more aware of and resistant to pressure from such influences as peers and the media. Some approaches have been shown to be effective as interventions for preventing alcohol use and smoking. They rely on "stress inoculation" to peer pressure, learning effective responses, and eliciting commitment to avoid such health-damaging behaviors.

Such "troublesome behaviors" as delinquency, early pregnancy, smoking, substance abuse, poor school achievement, and aggressiveness—sometimes called "transitional behaviors"—are highly intercorrelated, observed Hamburg, and should be studied in an intercorrelated way. She added that "stress," the focus of the Conference, is an omnibus word. It is a noun used as both subject and object. It is also a verb. There is often confusion about whether stress refers to a provocative stimulus or the physiological or behavioral response to such a stimulus.

The Conference has been appraising stress, but concerned researchers should realize that there are other considerations: the behaviors that enable the individual to avoid a perception of stress. "An individual may drink, for instance, to avoid experiencing social anxiety or may light a cigarette or engage in sexual activities to avoid the tension of not being one of the gang. It is important to appreciate that, although such avoidance of stress may be alleviating at the time, it often has its own problems later."

Hamburg then spoke to the issue of helping the handicapped and/or chronically ill adolescent cope with the tasks and challenges of illness, with special reference to her work with adolescent diabetics at the Laboratory of Developmental Psychology, National Institute of Mental Health.

To begin with, Hamburg pointed out that studies have confirmed that adolescents are strongly preoccupied with body image and body intactness. People who work with adolescents have learned to avoid elective surgical procedures particularly during the early adolescent period of pubertal change. At this time, adolescents are acquiring independence and strong interest in exploration and risk-taking, as well.

Hamburg noted that "we can learn many things from pathology that can be applied to development" as she began to describe the work with adolescents in the diabetic world. Although there is still much to learn about the etiology of juvenile diabetes (insulin-dependent), it is apparent that there are genetic and environmental interactions, including virus infection and/or emotional stress that may play contributing roles.

Empirically, according to Hamburg, many individuals who acquire diabetes during the decade between 10 and 20, or who have had it and then enter adolescence, experience marked deterioration in their ability or motivation to control the disorder. She added that all that is known about hormonal action so far indicates an impact of the sex hormones on glucose regulation. "And so, in entering puberty, poor control may not be simply motivation," Hamburg said, "it may be metabolic vulnerability." For example, a tendency toward disruption of control appears in some girls in relation to changing metabolism connected with the menstrual cycle. This finding about ability to control calls for more research. It may be one of the difficult aspects of diabetes for adolescents, because of their own confusion about motivation and ability to control.

Hamburg described the life of the insulin-dependent diabetic: "It is the most demanding, preempting kind of life one can imagine. There is no room for spontaneity, no room for error. Even on the weekend, a diabetic cannot sleep late because of the need to eat at a regular time. Diabetics must inject their insulin at the regular time or suffer consequences that, on occasion, can be life-threatening. As a diabetic, you must calculate the amount of insulin in relation to what you're eating and what you are going to do and, if you are sufficiently sophisticated, how you are going to feel, because your emotional state can also affect your glucose level."

The life of the diabetic is one of constant monitoring at some level. It is one of choices, as well. "Are you going to adopt the sick role and use diabetes as a secondary gain, or are you going to live with it and be a well person who carries out the normal social roles?" Hamburg added, "Even the ones who have a wellness paradigm cannot forget and many feel a sense of stigma."

Young diabetics are frequently tempted to alleviate present stress with actions that lead to future detriment. "Will the diabetic explain to the postfootball game gang, 'I can't have a Coke because I'm a diabetic,' or drink the Coke, reducing the anxiety of that instant but paying a health penalty later?" asked Hamburg.

Substantial areas of concern in diabetic self-management are measurement of urine three times a day and strict adherence to diet. As Hamburg observed, "It's interesting that there is a great deal of value judgment when things go wrong with the patients. Often, it's really blaming the victims. When control is not good they may be scolded by the physician. 'They've cheated, they've been bad'—and the burden gets laid on them. This brings us back to the blaming parent we heard about in Mike Goldstein's talk. Here, though, it's the weight of the whole medical system. There are a number of things we can learn from Goldstein's work and perhaps he can learn from the diabetics."

Current scientific evidence on diabetes suggests that the level of control will significantly determine the probability of future blindness, heart trouble, amputations, or other complications. This is a challenge to the adolescent to take a future perspective. For some this is developmentally difficult. A good deal of present research involves investigating the predictable crises of insulin-dependent diabetics. It is important to learn about "anticipatory coping" and the assistance possible from supportive individuals and health-care givers. These factors help to prevent loss of control and lessen emotional distress. More needs to be known about: What is the appropriate support network? How can immediate relatives be helped to become appropriately supportive, not overly intruding nor encouraging overdependence? How can peer groups, self-help groups, and older models whose coping skills are honed by experience be helpful to the young diabetic?

The talk elicited a number of questions and extensive discussion on denial and its helpful or detrimental effects in serious illness. Hamburg pointed out that denial per se is neither good nor bad. It depends on the context. She told of a study of individuals recovering from myocardial infarctions who, during intensive care following acute illness, did better "by the hard criteria of mortality" if they were "high in denial, low in anxiety, and rather low on depression." However, later in convalescence, when outcome variables covered such items as return to work and sexual and recreational activities, individuals who did best were "low on denial, somewhat high in anxiety, and moderate in depression."

A modest amount of denial seems necessary to maintain hope throughout the lengthy course of chronic illness, according to Hamburg, who said, "It's not whether denial is good or bad; there may be times when it's good. A diabetic adolescent who is too much tuned into the realities of 'I may go blind. I may have an amputation. I'm not going to live as long as the other person,' may not have motivation to undertake long-term career or personal commitments."

According to Moss, some families whose children have cystic fibrosis engage in "a kind of familial conspiracy," in which parents can't bring themselves to tell the children the consequences of their illness, particularly the short life expectancy. He mentioned especially a family with two children who had the illness, one of whom, "in junior high or high school, won a presidential physical fitness award. What are the dynamics of such a kid? Maybe this is an aspect of denial and maybe it's overcompensation, proof that one is adequate, and can deal with it. It represents extreme coping behavior."

"One of the mothers in my sample had something to say to all of us about denial," said Susman. "Approached by her therapist with the notion that, in planning for her son to go back to school, she was perhaps denying the fact that he was going to die, she responded, 'What am I going to do when I get up every morning? Say, "My son is going to die?" I have to get him off to school and I have to get my family ready for work.'"

Susman continued, "I think this points out the sometimes ridiculous nature of our interpretations. That comment was made about 3 years ago. Her son is now president of his 10th-grade class and is doing extremely well."

To Goldstein, the term "denial" is confusing. He reminded the conferees of the distinction he had tried to make earlier between denial and minimization. "If you can recognize a threat and find ways to minimize its impact so that you can go on living, that's different from never having accepted the reality of the thing," he said, and added, "I think we're getting caught up in a word that has very vague meaning. I hope we can find some other vocabulary for these appraisals."

Elizabeth Susman, Ph.D.

What can we learn from the stress of extreme crisis on children that would be relevant to adolescent development in general? This question was posed by Dr. Elizabeth Susman in describing the socioemotional and familial issues involved in childhood cancer. Families would have been told a few years ago, "There is nothing more we can do"; however, the chances of survival, at the present, for some types of cancer, are 50 percent.

Susman reiterated Hamburg's statement that being severely ill during adolescence is probably one of the most stressful events that can be experienced in the life cycle. In the case of adolescent cancer patients, hospitalization is long. For some adolescents, hospitalization means being placed in a protected environment designed to guard the patients from exogenous sources of infection while their immune systems are suppressed because of chemotherapy. While hospitalized, adolescents experience the loss of the "crucial adolescent supports" of peers, school, and families, "not to mention painful procedures"—bone marrows, lumbar punctures, daily blood samples, and intravenous injections. "It just goes on and on, and there's very little we can do to alleviate the pain because hospitalization and treatments are essential."

The hospitalized adolescent also loses privacy and autonomy and faces grave problems with body image. Because of the disease, adolescents frequently lose weight; leukemic children, on the other hand, may gain weight because of steroid treatment. As Susman expressed it, "Another unfortunate reality is the loss of an arm or a limb for children with osteosarcoma. Again, this means the permanent loss of one's body image, one's identity.

"The most problematic sequalae of treatment for some adolescents is losing their hair. Now you might say, 'How could losing your hair be any worse than losing your leg?' Adolescents will tell you that losing a leg is a necessity, it cures the disease, but losing your hair is loss of beauty, identity."

The only conceptual framework Susman and her colleagues could find for their study was a model formulated for adults and related to such problems as depression and anxiety (Susman et al. 1980). This was found unusable, however, since it was inconsistent with their clinical impressions of work with young people. As Susman put it, "Cancer units are not pleasant places to be, but you don't see people becoming chronically depressed. You see very few tears. You see nurses, doctors, and adolescents interacting in a generally cheerful fashion, or in whatever manner the adolescent is capable of interacting, given the biological status at the time."

The investigators initially spent about 3 months on a pediatric oncology ward conducting "random continuous observational narrations" any time between 8 a.m. and 11 p.m. They interviewed physicians, nurses, and the adolescents and their parents "to get a feel for what it was like in the process of adaptation to that setting." In the process, they decided to design a study based on the "neutral behaviors" of what most adolescents do while in the hospital, rather than on pathological behaviors.

Susman said, "We saw adolescents participating in their hospital school. We saw them watching television, calling their girlfriends and boyfriends--yes, adolescents with cancer are interested in sex just as normal adolescents are. We came up with basically a multimethod, multitrait approach. We attempted to have adolescents rate their mood status related to different aspects of the treatment cycle; however, because of their condition at some points, that was impossible."

Nurse and parent ratings and regular pencil-and-paper tests for locus-of-control scales were used as well as systematic observations. Guides for the researchers' questions were biological models of behavior or, as Susman said, "what happens to an individual's behavior based on what physicians and nurses generally assume will happen." That assumption was that behavior would be depressed when blood counts were lower because of the chemotherapy and normal when blood counts were normal. Based on long-term institutionalization of children, the model suggested linear decreasing trends in social interaction.

"We discovered that biological status was not a good predictor of psychological behavior," said Susman (Susman et al. 1981). "We found basically three groups of children. In one group, as the toxic effects of the chemotherapy were felt, the children's social behavior declined. This was primarily true of those who were not making a good adaptation to their disease, such as children with behavior problems. For example, there was one boy whose refusal to accept intensive chemotherapy was overridden by his parents because he was under 18—which gives you an idea of the kinds of biomedical, ethical issues we're confronted with in medical settings."

A second group showed the predicted trends, with their behavior following the toxic effects of the chemotherapy. The third group, surprisingly, showed linear increases in the amount of play; a category that included school activities, crafts, and games. Some children exhibited no significant behavior changes.

Susman's medical colleagues, especially, had asked why the changes differed so widely among children who shared virtually the same illness, received comparable drug dosages, and had fevers and infections similarly. This can be explained in part, said Susman, by biological heterogeneity in response to treatment. But this is only part of the story.

Data analyses using conditional probability models are still underway. They indicate that although the frequencies of behavior stay the same, sequences of behavior do change in relation to periods of illness and of recovery. Feeling well might be followed by active participation, laughter, and smiling. Illness might begin with active participation but be followed by passivity and nonresponse.

Mothers were most important in their response to their children's dependency needs. Susman commented that there are times when adolescents are extremely dependent on their parents. She added, "We've tended, I think, to look at autonomy. Attachment is not a concept we've considered in relation to adolescents, but it is one that we found to be terribly important in this setting."

To determine cognitive dimensions, the researchers used Piagetian techniques in interviewing the children, with such questions as, "What does it mean to have osteosarcoma?" and "What does osteosarcoma do to your body?" A relationship existed between what the mothers and the adolescents understood about the illness; the adolescents were more sophisticated about both treatment and the outcome of therapy, according to the researchers' observations. Susman thinks that this sophistication about technical aspects of the treatment is an effective way of coping with the illness.

High congruence was noted on a variable called "participation in the environment," which was related to such questions as "What do you plan to do when you go home?" "Will you see your friends?" or "Are you looking forward to school?" As Susman said, "If a child wanted to do that, so did the mother, and there was a tremendous amount of congruence." Another finding was that "if there was a realistic plan for the future there was a high congruence between adolescents and parents, even though the realistic plan might be preparing for death.

"It seemed to us that it was not necessarily the family atmosphere in sharing concrete data, but it was the concept of the future, the optimistic flavor, that was helpful for adolescents. We had a whole series of questions and measures related to the issue of control, and in hospitals adolescents have basically 'zero' control, as they put it. We found that knowledge of illness was correlated with almost every optimistic attitude about the future that we could devise. We found no support for the idea that the cancer patient will be devastated by information about the prognosis."

Susman commented that her earlier reports of these findings had been greeted with skeptical reactions by persons convinced that the children were "denying and telling you stories." Since that time, part of the study has been replicated at two different cancer treatment centers throughout the country.

Of the results, Susman observed, "Rather than the concept of denial, I think we are seeing the sort of thing Goldstein mentioned, an adaptation of accepting reality and going on and living with it, or the idea of transformational coping where you can't cope actively. You can't say, 'I'm going to get rid of the disease. I'm going to flee from the source of anxiety.' You're confronted with it and somehow you have to come to some sort of adaptation."

Based on her observation of "this extremely high-stress adolescent population group," Susman suggested that the concept of attachment in adolescents would be a worthwhile research subject for looking at stress in general. In the same vein, she recommended study of social support in the environment, the attitude of physicians and nurses. She explained, "In our context, we have primary nursing where adolescents can establish a long-term, very close relationship with their nurses. Also, 'the fantasy of a better future,' is supported. I've been accused of supporting denial, but it seems to me that it's not fantasy anymore to encourage the adolescent with cancer to think about the future, given the reality that there is a much greater chance of survival than there was 12 years ago.

"We found with adolescents that, because of certain cognitive developmental issues, anything is possible when you're an adolescent. Therefore, death is only one of an infinite number of possibilities and it's one adolescents wish not to entertain."

Growing Up Vulnerable and Growing Up Resistant: Two Longitudinal Studies

Preschool Personality, Preadolescent Personality, and Intervening Family Stresses

Jeanne Block, Ph.D.

Once again the matter of terminology was introduced as a requisite to deliberation about stress. Dr. Jeanne Block began her talk by saying that she would add to Moss's suggestion of a need for a taxonomy of stress and to Hamburg's question, "What do we mean by stress resistance?" Her additions would include defining the parameters of stress, such as average expectability relative to a particular period of life; chronicity of stress, as opposed to acute episodes; reversibility of the effects of stress; and the extent and nature of the ramifications of stress, in its generalization not only into many areas of individual functioning but also to other members of the family or social network. Yet another question relates to the source of stress, whether it results from a life-endangering episode, disruption of an important affective relationship, such as the death of a loved one, or from the many changes and challenges of living.

Block noted, "Thinking about the dimensions that define stressful events may permit us to make a more differentiated assessment of the stress and more articulated predictions of outcomes. Outcomes may be found to differ, not only as a function of individual psychological differences but as a function of stress parameters as well. In this approach, a particular stressful event, such as the death of a parent, would have a different impact depending on whether the death resulted from an automobile accident or followed a long, chronic, debilitating illness; or whether the parent had been engaged in life or withdrawn, isolated, and depressed. Such differentiation of stress respects the multidimensionality of the concept."

Referring to the term "stress resistance," Block called it "an unfortunate phrase that is imprecise in its meaning because it may imply not only the ability to deal with impinging stress but failure to register stress under circumstances that most people would experience as stressful."

As Block explained, the ability to deal resourcefully and resiliently with stress is a defining index of psychological health while failure to register stress in those situations is not and may be indicative of the kind of defenses the individual characteristically uses. This failure to register may be due to denial, a kind of avoidance, or to intellectual limitations in apprehending conditions that for others would be stress-inducing.

Block added, "There is also the possibility that an individual may, in specific contexts, prevent registration of stresses that, if allowed to impinge, would disrupt integrated and effective functioning—repression in service of the ego, perhaps." "Distancing" and "minimization" might thus act as "insulation," representing an adaptive mechanism for coping, as in the case of the physician who is "every day assailed by the tragedies of the human condition."

To sum up, Block observed that having excessive or disorganized reactions to normatively experienced stress is dysfunctional, just as not registering stress may also be dysfunctional. Drs. Jack and Jeanne Block consider that, while the phrase "stress resistance" emphasizes the resourcefulness of adaptation to stress, their concept of "ego resiliency" expresses this integrative function of coping more precisely.

Turning to research considerations, the speaker stated that the Blocks believe the longitudinal design offers a unique contribution to the study of reactions to stress, since it relies on prospective analysis rather than depending on sometimes fallible retrospective reports or on information that is no longer properly collectible. Well-analyzed longitudinal designs are concerned with individual developmental patterns and trajectories as well as the normative charting of development. Further, deviations from expectable development can be discerned by drawing periodic, independent assessments of the individual at different times. Because longitudinal studies often involve extensive and intensive assessment of both participants and their family context, it is possible to relate responses to stress in later life to early, prestress personality characteristics. As Block noted, it is sometimes useful to focus on a sample from a particular population judged to be at high risk for delinquency, child abuse, psychopathology, or some intellectual, medical, or physical impairment for longitudinal study of stress responses.

She added, "We suggest, however, that longitudinal studies of families unselected for anticipation of psychological or physiological pathology also can contribute importantly to knowledge surrounding stress. In our own clinically unselected and heterogeneous sample, the incidence of family changes, stresses, and personal tragedies can be evaluated and related to numerous factors of demographic and psychological interest. More important, individual differences in the reactions to stresses by our subjects as children and as adolescents can be evaluated as a function of their prestress psychological characteristics and those of the family."

The Blocks' longitudinal study, in its 12th year in 1981, was started when the participants were 3 years old. It has followed the children (and their parents) at ages 4, 5, 7, and 11, with another assessment beginning in spring 1981 as the children began to reach age 14. The three broad aims of the study were to chart the development of two aspects of ego function—ego control and ego resiliency; to determine the connections of those two functions to cognitive functioning and to social and emotional development; and to assess parental childrearing values, qualities of parent-child interactions, and characteristics of the child's environmental context that might be associated with the development of ego control, ego resiliency, and social-cognitive competencies.

Ego control, as the Blocks define it, relates to the individual's monitoring of impulse. When measured dimensionally, "the continuum at one end may be characterized by extreme impulsivity, the undercontrol of impulse. At the other end of the continuum there is extreme inhibition and constriction, the overcontrol of impulse. Ego resilience reflects the ability of the individual to maintain integrated performance under conditions of frustration and stress; it is concerned with the mediating, accommodating functions required to regulate behaviors in response to changing situational contingencies."

For purposes of this Conference, data from this longitudinal study were used to define and compare three alternative methods of operationalizing stress. The first index reflects simply the number of changes each family has undergone during the past decade: These changes include shifts in employment, moves from one home to another, changes of jobs, nonroutine school transfers, and changes in family membership (e.g., older sibling leaves home, grandparent moves into home). The second index of stress reflects disruptions in primary relationships of family members by separation, divorce, serious illnesses or death over the same 10-year period. The third index expresses a skilled clinician's comparative scaling of cumulative psychological stresses—changes, disruptions, accidents, tragedies—experienced by the family over the last decade. The clinician was instructed to evaluate the cumulative stresses in relation to the overall context in which they occurred.

The study* began with a sample of 130 3-year-olds from two nursery schools in Berkeley, Calif. The sample was heterogeneous and included 25 percent black children, 5 percent Oriental and Chicano (3 and 2 percent respectively), with the remainder white.

Assessments of each child were conducted over nine testing sessions and included 38 different, widely ranging tests and laboratory-based procedures. At each of the five age periods, comprehensive assessments were conducted of each child. Parents participated as well, describing independently their child-rearing values, using a 91-item Q-sort, when their child was in preschool and in preadolescence. They formulated adjective self-description Q-sorts of themselves and their child and were observed and videotaped while separately teaching the child a set of cognitive tasks. At three points in time, parents were interviewed about family status and their child's development. The most recent interview included observations and videotaping of mothers and fathers both separately and together as

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*The rationale for this research and results from the first years of the study are reported in Volume 13 of the *Minnesota Symposia on Child Psychology*.

they interacted with their adolescent in situations that required discussion, negotiation, and the resolution of differences.

To develop indices of the two constructs, ego control and ego resiliency, the researchers used not only tests and "laboratory-based measures" but observational measures. For these, nursery school teachers in the preschool and the classroom teachers in the public school were given a 100-item Q-sort (the California Q-sort) to describe the personality and characteristics of each child in the study. The Q-sort contained items like "is an interesting arresting child," "is talkative," "is self-assertive," "tries to be center of attention," "characteristically tries to stretch limits," "can recoup after stressful experiences," and "looks to adults for help and direction." For the 3-year-olds, independent descriptions by three teachers were usually available, but for the 7- and 11-year-olds, there was typically only one teacher to provide Q-sort description reports. Descriptions by the classroom teacher were augmented by other observers' descriptions when each child reached age 11, with the results combined to provide an overall index of the child's functioning.

Components of ego control, such as ability to delay gratification, persistence, planfulness, nondistractibility, and activity level (reflected) were assessed by using multiple measures whenever possible. These components, presumed on an *a priori* basis to reflect ego control, were standardized within each of the behavioral domains; from these assessments, an aggregated index of ego control was developed. Similarly, an aggregated index of ego resiliency was developed by assessing such characteristics as ability to alter one's preferred personal behavior under instruction, profit from feedback, form useful predictions from past experiences, develop alternate hypotheses, and maintain integrated performance when distracted or under stress.

From analyses completed to date, the Blocks feel that the construct and convergent-discriminant validities of the ego control and ego resiliency concepts have been demonstrated. In addition, they have found striking evidence of personality coherence from age 3 to 11. Further, ego control and ego resiliency have shown significant relationships with independent assessments of variables such as intolerance of ambiguity, categorization behavior, physiognomic perception, and preadolescents' adjective self-descriptions.

One of the important findings, consistent across all age levels, demonstrates a difference in the patterning of variables for boys and for girls. Another example, pertinent to the issues addressed in this Conference, is the difference in the underlying pattern of psychological characteristics associated with stress in the samples of males and females. The Blocks found the index of stress reflecting disruption of object relations—divorce, death, or major illness of a parent—to be associated with vulnerability and ego undercontrol in boys but not in girls. The difference between correlations of the stress index with ego control for boys and for girls was significant at several age levels. This finding agrees with reports by other investigators that boys react more adversely to the stress of divorce than do girls.

Block explained this finding by suggesting that "girls in our society are typically oversocialized," and added, "They have fewer opportunities to engage in the independent problemsolving that is important for later development of ego resiliency."

These differences in the personality characteristics associated with the two indices of stress for boys and for girls were robust and consistent over time. Block emphasized that the data contributing to the development of the stress indices were completely independent from the Q-sort data from which the child's personality descriptions were derived. Further, all data across ages are independent. These results demonstrate the importance of decomposing the concept of stress, using more differentiated measures. They further indicate that particular stresses may have different meaning or impact on males and on females.

Among her suggestions for research, Block reiterated the importance of differentiating the indices of stress and of analyzing the results for the sexes separately. She mentioned, too, the recurring theme of the individual's perceived control over events, whether it be called "efficacy" or some other term, as a subject for more research. "In the literature on developmental psychology and in our own study, there is evidence of the differential salience for boys and for girls of having control over external events."

Block also emphasized the importance of defining the parameters of the environmental context as well as of the stresses occurring within that context. In their study, the Blocks found different environmental correlates associated with each of the three indices of stress for boys and for girls. When the third index of stress, based upon the clinician's scaling of families, was evaluated with regard to its environmental concomitants, it was found that the homes of boys whose families scored high on the stress dimension were characterized by independent sets of observers as more structured, constricted, cheerless, and isolated.

In contrast, the homes of girls whose families scored high on the stress dimension were characterized as less stable, more permissive, and child-oriented. These results suggest that familial reactions to primary stresses may in themselves create second-order effects and changes in the characteristics of the home environment which affect boys and girls differently.

Block concluded with, "Some of our results suggest that reaction to present stress can be predicted by considering the individual's previous history of stress. Stress successfully handled may enhance feelings of efficacy and self-esteem, increase the repertoire of responses for management of stress, and develop the expectation of success in negotiating future stresses."

The Kauai Longitudinal Study

Emmy Werner, Ph.D.

Conducting longitudinal studies requires, in Dr. Emmy Werner's view, Maddi's "three Cs," a hardy personality, and three more Cs: "competence within the lead staff and the investigator; compassion within self and all the others that interact; and cooperation."

The study began, Werner said, with an intent to look at the joint contributions of constitutional factors, especially perinatal factors, and the quality of the caretaking environment on the development of the whole cohort of children born on the island of Kauai, Hawaii, in 1955. Independent assessments of the children and their families were made during the perinatal period and in years 1, 2, 10, and 18. The investigators monitored community agency files for the succeeding two decades. Attrition was low: Participation in the followups was 96 percent at 2 years, 90 percent at 10 years, and 88 percent at 18 years.

"Our study population is a kaleidoscope of different ethnic groups, mostly non-Caucasian—Japanese, Filipinos, part and full Hawaiian, Portuguese, Puerto Ricans, Chinese, Koreans, with only a small group of Anglo-Caucasians ('Haoles'). For the most part, they were immigrants from southeast Asia and Europe who came to Hawaii to work in the sugar plantations. More than half of the children in this cohort grew up in families where the fathers were semiskilled or unskilled laborers, and many of the mothers had less than eight grades of formal education," said Werner.

In the course of observing the effect of early biological factors and caregiving environments on the children, the researchers noted "rather distinct differences between the sexes in what you might call 'vulnerability' and resistance to stress within the first two decades of life. In this process, we also noticed 'false positives' who, against all odds and against all attempts to manipulate them by multiple regression equations, turned out to be better than anyone ever predicted, no matter which concepts or variables we put together, whether social, biological, or interpersonal. I have risked calling these children for the time being 'vulnerable but invincible.' But we do not know, although we have the data for some up to age 24, whether they will succumb to some other major, stressful life event in their later 20s or 30s or 40s."

Werner observed that there are advantages to a community-based study that starts before the children are born. "It gives a perspective that is more optimistic than short-term studies or longitudinal studies within key populations or prospective studies that focus mostly on pathology or very chronic illness or stress."

The Kauai Longitudinal Study began with assessment of the reproductive history and the mother's physical and emotional status in each trimester of pregnancy, from the 4th week of gestation until delivery. Judgment of the cumulative effects of perinatal stress and the quality of the caretaking environment included evaluation of the severity of pre- and postnatal complications by a pediatrician; home interviews and observations by a public health nurse, both before and after the child's birth and at the end of the first year; and psychologic and pediatric examinations and interviews with the child's caretaker at 20 months.

Abilities of the child outside the home circle were appraised by a variety of means: teachers' evaluations of classroom behavior in the 5th grade; home visits and family interviews by social workers when the child was 10; and scholastic aptitude, achievement, and personality tests and in-depth interviews conducted by the clinical psychologist when the child reached 18. Diagnostic examinations by specialists were given to children with "deviant findings" at birth and at 10 and 18 years, as well.

To give a "feel" for the proportion of problems identified in the community and in this particular birth cohort, Werner related briefly some of the findings relevant to mental health that were observed when the children were age 10, and again when they were 18. Among the groups who needed care at age 10 were 4 percent considered in need of mental health services of more than 6 months duration for such conditions as acting out, schizoid or sociopathic behavior, or, in a few cases, childhood neurosis. According to the panel, another 10 percent needed mental health services of less than 6 months duration. Most of the children were shy or anxious or had chronic nervous habits that interfered with achievement in school.

By age 18, 15 percent of the cohort had records of serious delinquencies. They had been involved in malicious injury, assault and battery, sexual misconduct, repeated truancy, running away from home and curfew violations, or possession, sale, and use of hard drugs. Eight percent of the girls were pregnant as teenagers. By age 18, 70 youths (some 10 percent of the cohort) had been sent to either the Hawaii Hospital or local hospitals for mental health reasons; there had been one or repeated suicide attempts; some had been treated as outpatients of the Hawaii Community Mental Health Center; others, on the basis of their interviews, were judged to have "serious conflicts and high anxiety."

In Werner's words, "Roughly speaking, we could say that one out of five youngsters, if we look at the overlap between problems, developed serious behavior or learning problems at some time during decade one to two. For some it was because major biological insults prevented adequate development; for others it was because a persistent disorganized family environment prevented normal integration, or because several of these risk factors interacted and exposed them to cumulative stresses which were too difficult to cope with unaided."

Werner gave a brief account of the joint contributions of constitutional factors and the caregiving environment, which are described "more elaborately" in *The Children of Kauai* (Werner, Bierman, and French 1971) and *Kauai's Children Come of Age* (Werner and Smith 1977). About 31 percent of the children had experienced mild perinatal complications, and 10 percent suffered from moderate perinatal stress, while for 3 percent that stress had been serious. By age 18, the four or five survivors of severe perinatal stress still had persistent and serious learning or mental health problems. Among those moderately stressed at birth, the rates of serious mental health problems were higher than those found in the cohort as a whole, but out of the original 698 in 1955, "survivors with marked perinatal stress make up a relatively small group of about 60 or so," remarked Werner.

"Along the way," she said, "we found consistently that perinatal complications were related to later impaired physical and psychological development (whether in the form of mental retardation, learning disabilities, or long-term mental health problems) *only* when combined with consistently poor environmental circumstances. Children raised in more affluent homes with an intact family and a mother with a good education showed few, if any, negative effects from reproductive stress unless there was severe central nervous system impairment."

Werner noted that not only in Hawaii but on the U.S. mainland a higher proportion of children from poorer socioeconomic backgrounds have a variety of serious, persistent behavior or learning problems. "But I'd like to point out that poverty alone was not a sufficient condition for the occurrence of a significant mental health problem. The majority of the children who grew up in poverty, like the majority of those exposed to perinatal stress, did *not* have a record of serious delinquencies or mental health problems by the time they reached age 18.

"However, in both poor and middle-class homes, infants perceived as difficult by their primary caretakers, interacting with distressed caretakers in a disorganized, unstable family, had a greater chance of developing serious and persistent learning and behavior problems than infants perceived as rewarding by their caretakers and growing up in a stable and supportive home."

Werner said of the disturbed child-caregiver interactions that both caregiver and child seemed to be "set in a vicious cycle of increasing frustration characterized by parental behavior that was perceived during the 20-month examination as careless, erratic, indifferent, or ambivalent. Social workers and teachers, who were unaware of the earlier child-caregiver transactions, noted when the children were 10 years old a pronounced lack of emotional support in the homes of most of the children whose problems persisted throughout adolescence."

During adolescence, more than three out of four of the group of children who were either very antisocial or who might have been considered schizoid had contacts with community agencies, the majority for persistent, serious behavior problems. Rates of contact with multiple agencies were six times as high as those for controls, and only one out of three was judged to have improved by age 18. That improvement rate rose slightly, however, among the minority for whom there was some community intervention.

The majority of children whose behavior problems at age 10 suggested a need for short-term mental health care but who had not endured early biological stress or early family instability seem to have been suffering from a painful reaction to major losses, changes, or parental conflict. By age 18, only 1 out of 10 had received help from any community agency during adolescence, but 6 out of 10 were rated improved by an independent group of psychologists who read their records and had access to their interviews. Werner said of these, "With few exceptions, the improved cases had been troubled by lack of self-confidence, anxiety, or chronic nervous habits; among the unimproved in this group were children who had been rated as antisocial."

The speaker noted, also, that children who had improved reported better communication with their parents during their teen years, "especially with their fathers, and they shared parental attention with fewer children in the household." She added that the majority of mental health problems identified in middle childhood had improved by the time the cohort reached age 18, but that these positive changes in behavior were observed more often in middle-class than in lower class children.

Werner commented that the sex differences she and her colleagues had noticed in susceptibility to both biological and psychosocial stress are similar to those being documented in other community studies. She said, "It appears that in our cohort boys on the whole were more vulnerable in the first decade of life and girls were more vulnerable toward the end of the second decade. At birth, more boys than girls in our study had been exposed to moderate to marked perinatal stress, but fewer of the boy babies survived. Boys at risk because of perinatal stress or congenital or parental defects, especially maternal mental illness, appeared to be more vulnerable amidst the disordered caretaking environment than did girls with the same predisposing conditions.

"By the end of adolescence, although boys still were more prevalent in the records of serious delinquencies, the sex ratio of other disordered behaviors shifted from a majority of boys in childhood to a majority of girls in late adolescence in this cohort. Boys generally reported or perceived more stressful life events in childhood than did girls, whereas girls reported more stress in adolescence."

Judging by the cohort as a whole, a child's sex appears to have some bearing on vulnerability and stress resistance. Werner observed, "If there are sex differences in susceptibility to biological and psychosocial stress, then the characteristics of resiliency in the face of both internal and external stress may also differ with the sexes, the stage of the life cycle, and the cognitive and social demands made on males and females in childhood, adolescence, and adulthood in a particular culture."

The "vulnerable but invincible" children, "invincible up to the end of their second decade, at least," according to Werner's caveat, shared the same chronic poverty, congenital defects, low maternal education, and, frequently, marital discord or family instability as peers who, within the same two decades, had developed serious problems. Of this 10 percent of the total cohort Werner said, "They 'worked well, loved well, and expected well' when we last interviewed them at age 18. They had not developed any problems along the way that brought them into conflict with the schools, the law, or the rest of the community, nor had they sought or received any mental health services during the first two decades of life. We find that some of the factors that seemed to contribute to their 'stress resistance' are common to both sexes, and some are unique for each sex."

Among these were age of opposite-sex parents (for girls, fathers over 30; for boys mothers below 30); family size of four or less children; a number of alternative caretakers available besides the mother; perception by the mother of high activity level and social responsiveness as an infant; a great deal of attention given to the child by primary caretaker during the first year; predominantly positive, self-confident coping style of the mother; advanced self-help skills of the toddler during second year of life; predominantly positive social orientation toward strangers and familiar adults; pronounced autonomy and independence; adequate sensorimotor and language development; little conflict between parents during child's first 2 years; few serious illnesses or accidents and adequate verbal comprehension, problemsolving, reading, and writing skills during childhood; structure and rules in household during adolescence, in addition to positive relationships with father and perception of mother as supportive and understanding; high scores on measures of responsibility, socialization, and femininity or masculinity; positive self-concept as a young adult; efforts toward self-improvement; and more informal sources of support through peers, kin, neighbors, ministers, and teachers.

Other ameliorating factors affected children of each sex differently. These are shown in table 1.

Werner emphasized that resilient girls differed from "high-risk" girls who had problems in adolescence on additional personality dimensions such as dominance, capacity for status, sociability, achievement via independence, intellectual efficiency, and a sense of well-being. Relationships of the resilient girls with their mothers were consistently positive, and they had additional support from other females in their households. Permanent absence of the father before birth or during early and middle childhood and long-term employment by the mother outside the household appeared to have no negative effects, but seemed to push them toward greater autonomy and competence.

Resilient boys were most often first-born sons who grew up in less crowded households. Fewer children were present in these homes, but there were adult models present in the families to provide rules and structure for their lives. In addition, few

Table 1. Ameliorating Factors

Differentiating for Resilient Girls Only	Differentiating for Resilient Boys Only
Older fathers (over 30 at birth of female child)	Young mothers (below 30)
	More often first than later-born
No prolonged separation from primary caretaker during year 1	No prolonged disruption of family life during year 1
Mother's perception of female child at year 1 "cuddly" "affectionate"	Mother's perception of male child at year 1 as "good-natured" "easy to deal with"
Mother's way of coping with female child "intelligent" "self-controlled"	Mother's way of copying with male child "concerned" "indulgent"
Few maternal mental health problems between birth and age 2	Father's presence in most households between birth and age 2
Description of female toddler at age 2 as "agreeable" "energetic" "feminine" "not dependent" "responsive"	Description of male toddler at age 2 as "aggressive" "deliberate, determined" "dominant" "eager" "independent" "quick, alert" "responsive" "stubborn" "masculine"
Mother/daughter relationship predominantly positive	Father's or older brother's presence in household between ages 2 and 10
More adult caretakers available between ages 2 and 10	Fewer mothers working outside of household for extended periods of time
More siblings in household during childhood	Fewer children in household
More sib-caretaking by girl during childhood	Less crowding

Table 1. Ameliorating Factors (Cont.)

More mothers working outside of household for extended periods of time during girl's early and middle childhood	Less conflict between family members during subject's childhood
Higher scores on measurements of dominance, capacity for status, sociability, sense of well-being, achievement via independence, and intellectual efficiency	Father's presence in most households during boy's adolescence
More internal locus of control	Good school record, but also activity in extracurricular activities
In adolescence, turning to mother for support and counsel	Turning to both parents for advice and counsel
Strong identification with father	Strong identification with both parents
High achievement motivation	Few stressful life events in adolescence than for resilient girls
Active social life	

mothers of resilient males worked outside the homes for extended periods.

Similar child characteristics discriminated between resilient and vulnerable offspring of psychotic parents who had developed some serious problems of their own in adolescence. Werner warned that these findings are only suggestive, since only 29 children, 4 percent of the cohort, were affected in this way. Within this group, children who had not developed any serious problems during their first score of years had been viewed by their mothers as good-natured and even-tempered infants; their self-help skills and autonomy were found to be advanced at 20 months; and teachers' classroom observations indicated good impulse control and ability to focus attention. The youths themselves, in adolescence, felt they were "in control" of their lives. There was also an alternate caretaker in the home—a father, grandmother, or older sibling—who had apparently buffered the chronic stress of parental mental illness.

Werner pointed to some findings of the Kauai Longitudinal Study that might be applicable to children anywhere. First, optimal adaptive development seems to derive from the balance between the power of the person and the power of the social or physical environment. To the extent that the child elicits predominantly *positive* responses from the surrounding milieu, he or she will be stress resistant, even under conditions of chronic poverty or in a home with a psychotic parent. To the extent that the child elicits *negative* responses from the environment, he or she will be vulnerable, even in the absence of biological or financial stress. Mental health intervention on behalf of children can be viewed as an attempt to restore the personal-environmental balance, either by removing risk or stress or by increasing the protective factors or competencies on which the child can draw, either from within or from his caregiving environment.

The impact of these forces appears to vary with the differing periods of the child's development. Constitutional factors—temperament and biological health—seem to be a most powerful influence in infancy and early childhood. Ecological factors—the household structure and interpersonal relationships among family members—gain in importance during later childhood. In adolescence, such intrapersonal factors as self-esteem appear to be important. Likewise, risk factors and stressful life events and protective factors within the child and his caregiving environment change with the sociocultural context in which the child grows up.

As Werner observed, "My guess would be that children growing up in traditional societies around the world, and perhaps among subcultures of our own, may be exposed to higher risk at birth but possibly to fewer stressful events such as serial divorces in childhood. They may be able to draw on more protective factors in their caregiving environment than children from modernizing and urban industrial societies. In such societies, though, the life of girls may be more consistently stressful and at risk than those of boys."

The Kauai study has suggested to Werner a number of areas for future study or for applications of current and past research findings to the adolescent development of mainland children. For instance, we need to know more about:

- *"Generalized resistance resources."* These resources include "biological, psychological, and social adaptability," "profound ties to concrete immediate others," and ties, formal or informal, between the individual and the community.

- *The results of sibling caretaking.* This is prevalent around the world, and even in our country, "once we move beyond the study of small nuclear families to those of minority groups." As Werner remarked, "We know from cross-cultural studies that child caretaking appears to be an important antecedent to responsible behavior leading to strong affective bonds."
- *Grandparents as sources of support* for "hundreds of thousands of children in our country who grow up in homes that are poor and broken." Both the Kauai study and studies of black children in urban, mainland ghettoes show that grandparents can provide continuity and support in an otherwise unstable situation and can have a buffering effect.
- *The role of other alternate caregivers.* Werner emphasized this point by saying, "Cross-cultural studies and studies of children and youth have made us aware that the effect of multiple caretakers on child behavior depends on the ratio of adults to children. Regardless of culture and standing in a social class, a mother's emotional stability and warmth toward her children is greater when there are more adults around to help and when she has fewer of her own children around to handle."
- *The impact of other role models.* Among these models might be the teacher, as a provider of skills and as a "resilient role model"; the minister or pastoral counselor; and a "good neighbor." "An informal network of kin and neighbors and the counsel and advice of ministers and teachers were more often sought and more highly valued than the service of any type of mental health professional among the people of Hawaii. Less than 10 percent, even of those referred by the study, ever utilized any kind of mental health professional in this community."
- *Implications of findings about family size and birth order.* In Werner's view, a close examination of such findings is indicated in order to learn more about the contribution of these variables to the principal concerns of this Conference—stress resistance, resiliency, and vulnerability.
- *The effect of parental age, both of mother and father, on the development of their sons and daughters.* In the Kauai

> study, "The age of the opposite-sex parent consistently discriminated between resilient 10- to 18-year-old children and peers with serious problems in coping, even after the effects of birth order were considered." In regard to society in general, Werner suggested that "even our present concern with adolescence may be motivated by these basic demographic constraints, but for some reason we haven't taken time to look at them. After all, we now have serial marriages. We have people marrying and having their children later the first time around. But we may have several marriages and, therefore, changes in the age of the father with the first, second, and third marriage. These marriages need to be looked at because they may change the parental perceptions of the child and may elicit certain qualities of caretaking that we haven't anticipated."

Werner closed her address, and the Conference, with these comments: "Central to coping with inevitable life stresses may be a sense of coherence, a feeling of confidence that one's internal and external environment is predictable, that probably things will work out, and that, in a sense, we have some control over our small world.

"The real issue may be whether the families and societies in which the children live their daily lives facilitate or impede the development and maintenance of a sense of coherence. The most optimistic thing we have seen in our study is that, even under adverse circumstances, change is possible if the older child or adolescent encounters new experiences with people who give meaning to his life and who tell him that he matters."

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